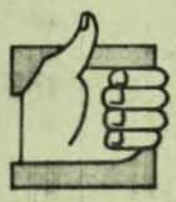
# If you're looking for a great place to work . . .

By John Gallant
CW Staff

What could IBM possibly have in common with Walt Disney Productions, Hallmark Cards, Inc., Inland Steel Co., the Los Angeles Dodgers, Mary Kay Cosmetics, Inc. and the Reader's Digest Association, Inc.?



Despite the fact that they operate in widely disparate industries, all those companies are great places to work, according to the authors of a soon-to-be-published book called *The 100 Best Companies to Work for in America*. High-technology firms make up nearly a fifth of the 100 companies, which coauthors Robert Levering, Milton Moskowitz and Michael Katz say are rarely examined from an employee's standpoint.

After whittling an initial list of 350 companies down to 135, Levering, Moskowitz and Katz took to the road to interview employees and garner statistics about the firms. Each of the 100 companies finally selected, the authors say, has something distinctive to offer its workers, whether it be the million-dollar fitness center at Rolm Corp. or the employee vegetable garden at Control Data Corp.'s headquarters.

Along with the biggest "pluses and minuses" of working for each of the 100 best, the three have rated the companies on the basis of pay, benefits, job security, advancement opportunities and ambience. Big and small alike, most of the companies have fostered among workers an attitude of "we're all in this together."

Below are some of the high-tech firms that came under the trio's scrutiny:

■ ***IBM*** can make its employees feel like giants, the authors say. But those who don't abide by the industry giant's rules — laid down in a 32-page code of ethics — won't last long. According to the authors, few companies of any size can match the benefits or the job security that Big Blue offers. The authors add that IBM is a world unto itself — a world where secrecy is the hallmark. And in that world filled with ardent believers, the nonbeliever may not be very comfortable.

■ You'll get the opportunity to work with a lot of "brainy people" if you're hired by ***Hewlett-Packard Co.***, but the authors warn that you may be handicapped if you don't have a degree in electrical engineering or if you're a woman. HP is a model of how a company can grow, prosper and still maintain a personal feeling, the trio writes, and workers are impressed with the company's "playful" atmosphere. Employees enjoy good pay and a good working environment — not to mention the 10 recreation areas HP owns.

■ Work at ***Apple Computer, Inc.*** and you'll feel like a trailblazer. There's a pot of gold at the end of your trail at Apple, the authors say, but in the end you and the company may be "munched to death by Big Blue." Levering, Moskowitz and Katz claim that Apple's high morale attracts many to the firm, and a subtle 1960s youth

See **GREAT** page 4

# Bell Labs, HP and IBM among the 10 best places to work

Among the high-technology companies, which are the best of the best employers?

According to the authors of *The 100 Best Companies to Work for in America*, Bell Laboratories, Hewlett-Packard Co. and IBM are among the 10 best U.S. firms for workers.

Only HP is listed among the 10 best paying companies, and Apple Computer, Inc., Bell Labs and IBM are among the 10 best for benefits.

When it comes to job security, Digital Equipment Corp., HP and IBM are among the prestigious 10 best. Tandy Corp. and IBM are represented in the list of the 10 best companies for job advancement.

But what about the truly important things in life, such as ambience? If it's ambience that you want in a high-tech firm, then you should apply to Apple and HP, say coauthors Robert Levering, Milton Moskowitz and Michael Katz. If you're looking for a company with a country club, send your resume to IBM, which maintains two such recreational facilities that employees can join for just $5 a year.

Which companies are noted for throwing the best employee parties? HP and Tandem Computers, Inc., where the authors say the Friday afternoon "beer bust" has become a hallowed tradition. Control Data Corp. gets the high-tech nod for best employee vegetable garden, and Rolm Corp. and Tandem Computers rate among the best for company-paid sabbatical plans.

If you're looking for the best vacation plan, you're in the wrong industry. No company can beat Reader's Digest Association, Inc. for vacations, the authors say. Besides, who could complain about working in a place called Pleasantville?

## GREAT from page 1

culture pervades the work place. Not everyone fits in with the microcomputer giant, but those who do benefit from Apple's strong "share the wealth" attitude.

Vegetable garden notwithstanding, ***CDC*** is a "leader in corporate social responsibility," the authors report. CDC does not exactly attract flamboyant employees, but is more a haven for "YMCA-type do-gooders — provided they possess a strong Calvinist interest in making money." CDC doesn't believe in the relaxed and informal atmosphere of Silicon Valley high-tech firms; suits and ties are a must. But workers are also able to take advantage of the company's extensive employee assistance programs.

People communicate on a first-name basis at ***Digital Equipment Corp.***, according to the authors, but for a large organization, DEC lacks structure. DEC is described as an "Eden for engineers," but the "looseness" of the company offends those engineers who want things run by the book.

Send your resume to ***Bell Laboratories*** if you want to work at what Levering, Moskowitz and Katz describe as the "frontier of knowledge." But there's a tension at the company which derives from the desire to do research and the need to produce a product for the parent company — AT&T. You probably won't get hired anyway; some workers say you have to be able to walk on water just to get to the interview stage.

*The 100 Best Companies to Work for in America*, scheduled for release this May, will be published by the Addison-Wesley Publishing Co., which is located in Reading, Mass. 01867.

**Second-class postage paid at Framingham, Mass., and additional mailing offices.** *Computerworld (ISSN-0010-4841) is published weekly, except: January (6 issues), February (6 issues), March (5 issues), April (7 issues), May (5 issues), June (7 issues), July (6 issues), August (6 issues), September (6 issues), October (7 issues), November (6 issues), December (6 issues) and a single combined issue for the last week in December and the first week in January by CW Communications/ Inc., Box 880, 375 Cochituate Road, Framingham, Mass. 01701.*

# Banks embracing videotex to cut expenses

By Paul Korzeniowski
CW Staff

Banks are beginning to look seriously at videotex home banking applications to cut expenses. "Processing a check costs at least $1.02," said Robert I. Lipp, senior executive vice-president at Chemical Bank Corp. in New York. "Electronic processing would cut the cost to 35 cents."

And, according to Lawrence Hemmen, senior vice-president at Manufacturers National Bank, Inc. in Detroit, "In addition to cost benefits, home banking reduces a bank's dependency on its branch network and paper processing."

Before banks can realize the benefits of home banking systems, however, videotex systems and home banking applications have to be developed. "Home banking applications are two or three years away from being fully developed," Hemmen said.

### Competition hot

Competition to develop a home banking application is heating up. Chemical Bank, the nation's sixth largest bank, has developed Pronto and sold licensing agreements to eight other banks, including Manufacturers National. Pronto allows Apple Computer, Inc., IBM and Atari Corp. microcomputer users to complete home banking functions such as balance inquiry, bill paying, funds transfer and electronic check register.

"Although the system doesn't require an intelligent modem, it works better with one," said Mark Holthouse, vice-president at Chemical Bank's Electronic Banking Division. Pronto runs on Chemical Bank's Tandem Computer, Inc. Nonstop II system and utilizes Tymshare, Inc.'s Tymnet network, which allows the eight user banks to transfer data to and from the supermini.

For $12 a month, a user receives a program diskette or cartridge and documentation. Because Pronto is in its pilot phase, the eight user banks are limited to 200 customers each "to ensure that communications protocols are in place and each bank can easily install the system," Holthouse explained.

Implementing a home banking system is an expensive proposition. "A bank spends approximately $250,000 for this system," Holthouse said. Chemical Bank is charging $25,000 for one CPU license, $4 per customer and $1,500 for a communications interface to each host computer. Each bank pays its own Tymnet communications charges.

The system won't become cost-efficient until each bank has 15,000 to 20,000 users, according to Holthouse. "A major benefit is the number of new customers the system attracts," he added.

One Pronto licensee, Bankers Trust of South Carolina, Inc. in Columbia, S.C., placed an advertisement in a local newspaper to attract Pronto users. "We hoped that 150 people would express an interest in the system," said Kathy L. Nave, marketing officer. "We received more than 600 inquiries."

Pronto's limitations discouraged some potential users. A user can pay only those merchants who have an account on the system. "Some credit cards can be paid, but many vendors are not part of the system," Holthouse said. "A customer still needs a checkbook."

Bankers Trust opened its system to businesses in the area. "Approximately 50 businesses expressed interest in the system," Nave said. "Only very small businesses, those that use only a checkbook to balance their books, can use the system."

Holthouse said Chemical Bank plans "to enhance the system in the future and add applications and functions."

# THE COMPUTERS THAT NEVER QUIT

*Keeping banks open 24-hours a day is a job for fault-tolerant processors*

By ERIK ALEXANDER

Probably no industry in the country is so vulnerable to being shut down by computer failure as is banking. If computer operations in banks were to fail completely today, back-room check processing, electronic funds transfers, credit card processing and ATM transactions, just to name a few, would all grind to a halt. Not only would such failures inconvenience thousands of banking customers, getting the computers back into operation and restoring banking operations to normal could be very costly.

For these reasons, banks have been leading all other industries in deploying fault-tolerant computers. These machines are so named because they are virtually immune to the problems that seem to plague their more commonplace cousins. For starters, all fault-tolerant systems duplicate some critical components that are vital to the operation of computers. Potential trouble makers such as power supplies or disk drives are backed up so that the computer systems will continue to operate if one should fail.

But the similarities between the fault-tolerant computers offered by today's vendors are getting fewer and fewer (*see related story, page 32*). And bankers, because they will find themselves the principal target of fault-tolerant computer marketing efforts, will likely become quite knowledgeable about the differences that exist between today's systems and which will best fit their needs.

Banking today represents about 20% of the market for fault-tolerant computers. Add to that the computers used in the financial services industries and together they account for about 30%. That's more than twice the volume of business being done with manufacturing, the other major market targeted by the vendors of fault-tolerant machines.

The manufacturers of the hard-working computers sold a total of about $500 million worth of equipment

last year. Nearly all of that went to Tandem, the Cupertino, Calif.-based manufacturer that pioneered the concept of non stop computing back in 1977. That year, Tandem sold less than $8 million worth of equipment. This year, its sales should easily top $500 million.

A track record like that naturally attracted more than just customers, many of which were banks. Tandem has also attracted a number of competitors, and many of them are just now getting started. A distant No. 2, but far ahead of any other, is Stratus. The Natick, Mass., company has shipped more than 100 systems since it began delivering computers a little more than two years ago.

Now both Tandem and Stratus are preparing for the onslaught of Auragen Systems Corp., Sequoia Systems Inc., Parallel Computers and Tolerant Systems. All are planning to ship their first fault tolerant computers this year and all say that banks will play a prominent role in their forthcoming marketing efforts.

No wonder, since banks have so far done very well for Tandem. "Commercial banking is our single biggest market, with 20% of our total shipments. And that's increasing," says William Howell, Tandem's manager of financial industry marketing.

So Tandem's competitors naturally think that banks also will do well for them. Auragen President Rick J. Martin says that banks could gather all their transactions during the day and process them overnight when they simply operated during 'banker's hours.' But, says Martin, "Now that banks are at the leading edge of customer service with 24-hour accessibility, they need systems that run continuously."

It's quite true that banks are in need of computers that never quit. In wholesale banking, the large sums of money shifted around daily require the utmost in data integrity. And high interest rates increase the importance of finishing transactions on time, and with no error from a problematic computer.

And in retail banking, the burgeoning popularity of electronic deposits and withdrawals at both automatic teller machines and computerized teller terminals has all but killed the old theory that 95% up time will keep customers satisfied. Fault-tolerant systems are usually considered to have fractionally greater than 99% up time. And Stratus goes so far as to claim that it has experienced only one failure in a total of 1,460 years of processor operations.

Such reliability is necessary when the total operation of an institution is tied to a single computer. At the Las Vegas Valley Bank of Nevada, for example, a Tandem system handles 424 teller terminals and 41 ATMs, as well as home banking, specialized items and returned checks.

During the average workday, the Tandem system processes 4.3 transactions each second, with user response times seldom going beyond 1.65 seconds. Batch processing is handled during off hours by a pair of Burroughs 4800 computers, but the Tandem handles all real-time operations.

The Las Vegas bank also combines a voice-synthesis unit with the computer to provide an automated phone in service. When customers use touch-tone phones to

## Can It Break Down?

Unlike conventional computers that let their users know of a component failure in no uncertain terms, fault-tolerant computers will continue to churn out work, shrouding the possibility that they may be on the verge of a catastrophic failure.

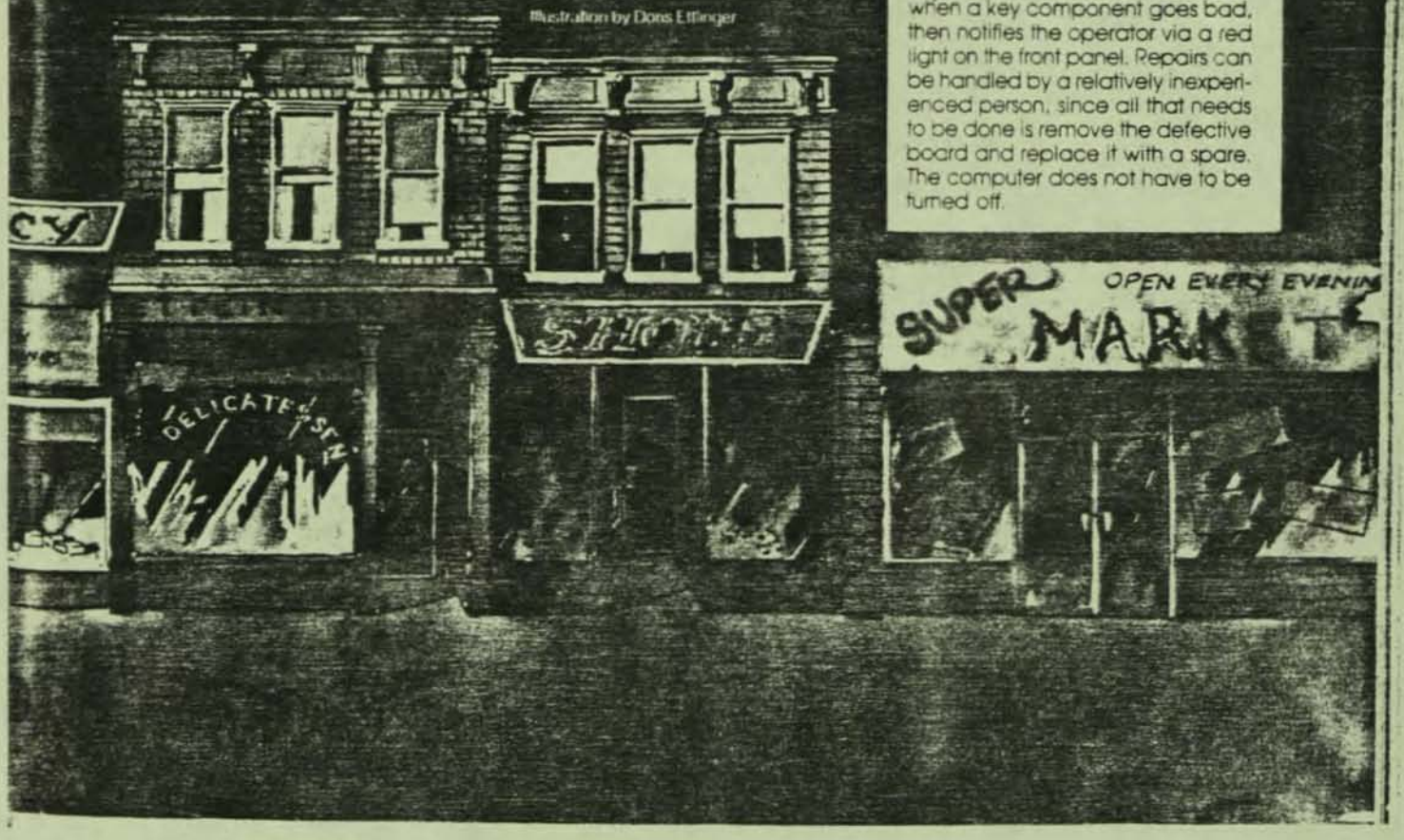
A favorite tale of salesmen on the fault-tolerant circuit begins with a representative on a routine stop at a customer site. He notices a diagnostic display for component failure and tells the operator that he needs to call a repairman. "What for, it's working fine?" replies the perplexed operator.

Manufacturers work hard to combat such attitudes. Their machines contain only so much redundancy, and one component failure, while not shutting down the machine, can render it subject to failure should yet another similar component fail in time. Both Tandem and Stratus have incorporated extensive self-diagnostic equipment into their computers, so operators will be immediately alerted to potential problems.

Tandem systems all contain an operations and service processor that continuously monitors the system, displaying the location of faulty parts on an operator's terminal. Repairs are handled by Tandem's service network.

Stratus shuts down an entire board when a key component goes bad, then notifies the operator via a red light on the front panel. Repairs can be handled by a relatively inexperienced person, since all that needs to be done is remove the defective board and replace it with a spare. The computer does not have to be turned off.

Illustration by Dons Ettinger



# NEVER QUIT

enter personal ID information, the system can automatically provide up-to-the-minute account balances, spoken in a computerized feminine voice. In addition to dramatically reducing the number of calls to bookkeeping, the system extends the service to 24-hours, seven days a week.

It is applications for fault-tolerant systems such as these that make the banking market so attractive to all the vendors. But some independent observers think all this attention being paid to banking may be too much of a good thing. Says Omri Serlin, head of Itom International, a Los Altos, Calif. research and consulting firm, "The problem is that they're all looking at banks and other financial institutions instead of looking to new markets. They may not all survive."

Stratus President William Foster acknowledges that all the new startups could have an impact. But he adds, "We just don't see the competition yet."

And front-runner Tandem so far appears unconcerned. The rush of new companies into the marketplace is not likely to have much impact on his operations, Howell feels. Instead, he says, Tandem is keeping a very watchful eye on established business computer giant IBM.

While large IBM mainframes can be linked together for fault-tolerant operation, and IBM does try to sell such systems, the company so far lacks an offering that is specifically designed for non-stop operation.

It is unlikely that Tandem can forestall IBM's entry into the market forever—indeed some industry observers pick 1984 as the year that IBM will dive in (*see story, this page*)—but the company is doing its best. Late last year, Tandem unveiled its next generation of systems, the TXP, which offers nearly 2.5 times the performance of its previous models. Running the same applications software, the processor consists of two 16-bit modules linked to achieve quasi 32-bit performance.

Not content to stop there, the company is reported to be working on a true 32-bit machine that would offer even greater performance. Since it isn't expected to be marketed for another two years, it is still unclear whether the machine would still be fully compatible with the existing Tandem lineup.

**Auragen's Martin: "Now that banks are at the leading edge of customer service with 24-hour accessibility, they need systems that run continuously."**

Other major computer vendors are known to be eyeing the fault-tolerant market as well. Digital has occasionally supplied such systems in special situations and Perkin-Elmer just unveiled a software package that lets users configure fault-tolerant systems using their machines. But in both cases, the lack of application software, a situation that is unlikely to be quickly remedied, will probably restrict their marketing efforts, particularly in banking.

Applications software is shaping up as the big battleground between the competition. And the result is likely to be a very positive one for bankers. Tandem, with its seven-year history and large lead over the competition, quite naturally has the most to offer the banking industry. Although its unique, and not-so-easy-to-use operating system is often criticized by programmers, time has played heavily

## Waiting for IBM

Even at $500 million a year, some might say that the market for fault-tolerant computers is still not large enough to attract the entry of IBM. The computer giant has so far sat out on the sidelines, occasionally bidding on specific jobs. Its MVS mainframe operating system can be configured to provide cross checking between multiple processors.

While that approach might have been enough to take on Tandem, which also uses software cross checking, in today's market the software approach is not considered to be state of the art.

Analysts predict, however, that the market will grow rapidly, reaching $5 billion by 1988. Such a ten-fold increase is not likely to be lost on IBM. Indeed, Robert Fertig, president of the market research firm, Enterprise Information Systems, says that he expects IBM to announce the introduction of a hardware-based fault-tolerant computer sometime later this year. And that, Fertig says, "could pull the rug out from under Stratus and others."

Fertig says that would be unfortunate. He credits Tandem for initially developing the market and, until recently, offering excellent price and performance in its equipment. He says the company hasn't quite kept pace in the last year, but concedes that it's working hard to catch up.

As for Stratus, Fertig says that the company's technology is clearly superior to IBM's, but does not possess much of a track record at this time. An analyst with Alex. Brown, John F. Mergen, concurs that hardware checking is the current state of the art and gives the technological edge to Stratus as well.

But Mergen disagrees that the entry of IBM, which he doesn't doubt is on the way, will spell the death of Tandem, Stratus or even some of the smaller companies now gearing up. Instead, Mergen, who believes the market will expand ten-fold before the end of the decade, says "no one supplier can supply that much product, not Tandem, not even IBM. Together, they'll all develop the market, not destroy each other."

# NEVER QUIT

**Tandem's Howell: "Commercial banking is our single-biggest market, with 20% of our total shipments. And that's increasing."**

in the company's favor. Today, dozens of transaction processing applications programs are available for Tandem systems.

But the hardware produced by Stratus is much easier to program. In fact, because their machines run on a more standard operating system, applications that were previously running on standard computers can often be moved into the fault-tolerant environment with a minimum amount of work.

Some of the more recent startups, notably Sequoia, claim to have similarly easy-to-program machines. Gavin Villapiano, director of marketing services for the Marlborough, Mass.-based firm, says the Sequoia system will be running the Unix operating system. That, he says, should make it relatively simple both to move existing applications over to the non-stop system and to write new programs.

The addition of new programs is shaping up as one of Stratus' strengths. In December, Stratus announced the availability of two new programs, both designed for the banking community. The first, a program developed by Logica in Boston, is a comprehensive electronic banking product.

Called Stratanym 864, the program integrates automatic teller machines, point-of-sale terminals, home banking devices, other banking terminals and financial service equipment to a mainframe data processing system. Further, the combined Logica/Stratus system can also operate as a shared facility among a number of institutions. In such a shared mode of operation, it could control a credit card authorization network and/or control the use of point-of-sale devices in retail stores or at gasoline pumps.

The other major software product that Stratus unveiled, ON/2, is an on-line electronic funds transfer program designed primarily for retail operations. Targeted at banks with assets ranging from $250 million to $1.5 billion, the control system supports the wide variety of on-line terminals used in banks, ATMs and point-of-sale terminals. The electronic-funds-transfer system processes all transactions entered on the terminals, constantly updating a central data base maintained in the Stratus fault-tolerant computer.

Clearly, Stratus is working hard to establish itself as *the* supplier of fault-tolerant computers for small- to medium-size banks. And while Tandem would hardly concede that position, its most recent efforts have been clearly targeted at the potential entry into the market of IBM. As for the newer companies lining up to jump in, their future is far from certain. What is certain, however, is that banks will continue to rely more and more on fault-tolerant computers. They can't afford not to. CBT

## Bank of Boston Picks Stratus

One of the latest banks to jump on the bandwagon for fault-tolerant computers, the Bank of Boston says it took nearly a year to move from the decision to computerize its corporate cash management program to signing a purchase agreement. "But that [process] could easily be trimmed by four months now that the market has settled down a bit," says Stephen MacQuarrie, first vice president.

Last January, B of B decided that its increasing volume of business justified moving from a dial-up time-sharing system to an in-house computer. "The 500th customer cost us as much as the first, so we wanted to get something with a fixed cost that would let us spread the costs out while gaining volume," MacQuarrie explains.

The bank spent six months on informal shopping to acquaint itself with the rapidly changing fault-tolerant computer marketplace. Serious investigation then began in June. And the first question asked of all potential suppliers concerned applications programs. "We didn't want to write any software ourselves," MacQuarrie says.

This requirement for a turnkey system that would let corporate customers check their balances and initiate electronic transactions narrowed the list to three: Stratus, Tandem and Digital Equipment Corp. Although Digital doesn't focus on fault-tolerant systems, it has some configurations that met these requirements.

After two months of discussion, B of B settled on a Stratus system because "we got the same bang for less buck," MacQuarrie says, adding, "even though the main thing we wanted was the software, we were very impressed with the hardware."

Although B of B paid "in the high six figures" for the machine, which will consist of 4 modules linked together, MacQuarrie feels the computer will generate the cost savings that the bank sought. And over the long run, he also likes the fact that "maintenance cost is very low."

But MacQuarrie, who says B of B is one of the leading lenders to high technology companies in New England, also expects that there will be some problems and adjustments before the system goes on-line in April. "I don't know how it will go. Right now everything's fine. But these relationships are like male-female relationships. It's at the early stages right now when everything is perfect. Things will cool off and there will be problems," he says.

## BANKS THAT HAVE TAKEN THE FAULT-TOLERANT PLUNGE

Cass Bank & Trust—*St. Louis*
Centerre Bank—*St. Louis*
Chase Manhattan Bank—*New York*
Chemical Bank—*New York*
Citibank—*New York*
Crocker National Bank—*San Francisco*
First National Bank of Chicago
Security Pacific National Bank—*Los Angeles*
Valley Bank of Nevada—*Las Vegas*
Wells Fargo Bank, N.A.—*San Francisco*

When Tandem first brought out its "Non-stop" line of computers in 1977, hardware costs were considerably more expensive than they are today and the company kept redundant hardware to a minimum.

There were and still are no alternatives to multiple processors, power supplies, disk drives and data paths, but Tandem and its competitors did have to confront the problem of how to monitor these systems, determine if a part fails and then prevent the computer from going haywire, while making sure that no harm has come to data that was in the system.

Keeping in mind the cost of hardware, Tandem's solution to this problem was to design a software package, the operating system, that monitored the computer's performance. The operating system continually cross checks the results of the multiple processors. If a portion of the hardware system fails, the operating system automatically shuts down the errant component and shifts the workload to the remaining sections.

Critics of Tandem's technology charge that the additional software required to monitor and control operation makes these systems slower. But Barry Ariko, Tandem's director of marketing, counters that "only 5% of the raw processing speed of the system is given up. That's not much for the hardware savings that we can give."

Critics say further that Tandem's specialized software makes it difficult to design and implement applications software. John F. Mergen, an analyst for Alex. Brown, says that the difficulties in programming Tandem systems occasionally lead programmers to shut down the fault-tolerant features of Tandem computers.

Tandem notes only that its computers work, that they keep going despite faults that would disable other machines, and that the systems are more powerful and have more software available than competitors' machines.

The competition, however, is hitting hard on the issue of superior technology. Stratus, for example, is the leading proponent of totally redundant hardware. Their system places two of each critical component on every circuit board and two identical circuit boards handle each function. Each board is designed so that if its dual components yield conflicting results, the board immediately takes itself out of service.

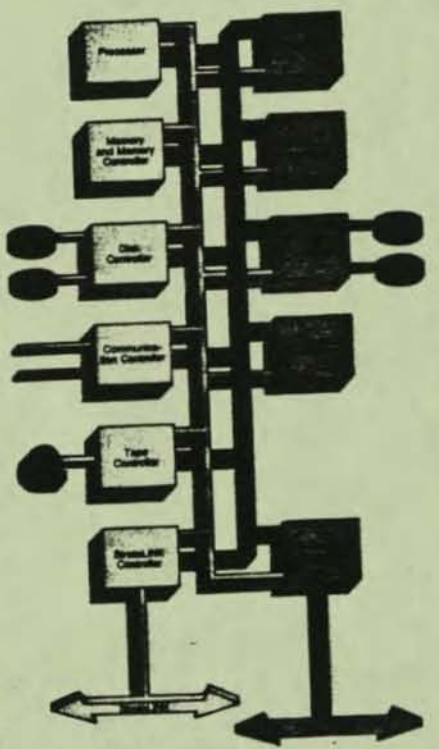
No special software is required for the Stratus approach. And since the cost of software development now exceeds the cost of hardware in most large systems, Stratus is now considered to have the more cost-effective approach in fault-tolerant systems.

All of the other companies now getting started are also taking the redundant hardware approach. And they too are using industry-standard software that will make program development relatively easy.

The price of fault-tolerant computers is closely in line with that of conventional computing power. Prices for basic Tandem systems range from $61,000 for the low-end Non-stop system to $239,000 for the basic TXP high-end system. Stratus says its prices begin at $140,000.

Both systems are easily expanded, in fact, much more so than conventional computers. Repairs and additions to the systems can be made while they're up and running—there's no need to turn them off. Tandem's Howell says this can save money, and not just because downtime is expensive. "With conventional systems," he says, "banks generally add enough processing capacity to hold them for about two or three years so they won't have to take the system out of service to make additions. But then they have paid for processing power they don't need right away. We eliminate that."

## How They Do It



**As depicted here, Stratus' approach to fault-tolerance relies exclusively on redundant hardware cross-checking itself to determine if an error has occurred.**

# Journalist joins Tandem Computers board

Andrew Knight hopes to bring a new and international perspective to the board of directors of Tandem Computers Inc. of Cupertino.

Andrew Knight

Knight, editor of the British news magazine, The Economist, was elected a director of Tandem last month. He says he expects to provide a European point of view on everything from marketing strategies to long-range investment decisions.

For example, U.S. computer companies have to adapt their images to the European market, he said. "In older environments such as we have in Europe, the idea of the computer is endowed with magic . . . and therefore considered something to be frightened of or somehow worried about," Knight said. What's more, many European consumers tend to discriminate against U.S. products, although less so than in the past, he said.

As a result, a successful marketing campaign — like one of IBM Corp.'s recent European ad programs — should portray the company as "extremely user-friendly," he said. "IBM portrayed itself as a local company, with a sort of patriotism and friendliness," he said.

Knight also expects to offer advice on Tandem's long-range planning for international expansion, both in Europe and the Far East. "Because Europeans have had dealings with Japan and the Far East for many years, we do have an outlook which could be extremely useful when you're looking forward 20 or 30 years," he said.

U.S. companies sometimes have trouble analyzing the impact of world events, Knight said. For example, after several southern European countries elected socialist governments in recent years, an American company might have been frightened away from doing business in those countries, he said.

"American directors reading American papers might say, 'Oh heavens, (southern) Europe is collapsing, we'd better stick to the North," Knight said. That would be a mistake, he said.

Knight, who is 44 years old, has been editor of The Economist since October 1974. He has worked for the magazine since 1968. He was with the British merchant banking firm of J. Henry Schroder Wagg for two years before joining the Investors Chronicle in 1964.


SJ Merc News 3/14/84 p11D

Electronic News 3/26/84 p29

# 1waited High-End Drive

cent for 10 units to 12 per cent for 40 or more units, IBM said.

IBM Credit Corp is offering 3-, 4-, and 5-year term leases for the tape subsystem, starting at $817 a month for the B22 tape unit and $1,240 a month for the A22 controller. Minimum maintenance runs $225 a month for the B22 and $360 for the A22.

IBM is also making the tape subsystem available on a rental basis. Monthly rental charges for the A22 controller are $3,630, and $2,380 for the B22 tape drive.

Although under development for the better part of a decade, IBM said the 3480 would not be generally available until the first quarter of 1985. The firm said certain qualified customers could receive shipments of the product beginning in May, however.

The 3480 takes up 60 per cent less floor space than the 3420 model 8 tape drive and requires 60 per cent less power and cooling capacity than curent IBM tape drives, IBM said.

At the same time, IBM also brought out a new version of the Hierarchical Storage Manager (HSM) software that enables interactive transfer of files from disk storage to tape for back-up. The new Data Facility Hierarchical Storage manager (DFHSM), Version 2, provides for the management of data in the 3480 subsystem, as well as the 3420 family, IBM disk drives, and mass storage devices that operate under Virtual Storage/Extended Architecture (MVS/XA) and MSV/370 environments.

**Higher Priced**

Plug-compatible vendors last week reacted to the new IBM cartridge tape drive by noting that while most of the specifications of the drive were not surprising, the subsystem's price of $237,910 was a bit higher than expected, considering its compact size and extensive use of denser circuits.

Memorex' vice-president of planning and program management Allan Conover said at its current price the 3480 is not as competitively priced as his firm expected. "I'm surprised at its high price. At $238,000 in a one by eight (controller to drives) configuration, it's not competitively priced with reel-to-reel tape drives."

Mr. Conover said that since the 3480 would not be generally available until the first quarter of next year, Memorex had time to evaluate its response to the new tape drive. Memorex, he said, is working with Fujitsu on cartridge tape technology for the IBM plug-compatible market, although he declined to provide details on when or if the product would come to market.

"We're waiting until we get more information on the IBM product to make a decision whether or not we will market a compatible product or not," Mr. Conover said.

In addition, Mr. Conover pointed out, Memorex late last year signed an agreement with Electronic Processors, Inc. (EPI), to manufacture and market the latter's 130M-byte, ½-inch tape cartridge drive that fits the 5¼-inch footprint (EN, Nov. 21, 1983).

**Decision Coming**

A Storage Technology spokesman said the Boulder, Col., firm also has under development technology that would enable it to market a 3480-compatible tape drive. A decision on proceeding will be disclosed in the next couple of weeks, he said.

# IBM Enhances 8100 Information Sys.

RYE BROOK, N.Y. — IBM beefed up its 8100 Information System last week, adding a second model of the 8150 processor, a second I/O controller for double-density disk drives that doubles disk storage, and the ability to attach the PC or PC XT as well as new 3179 and 3180 terminals. (See page 34 for a separate story on the 3179/3180.)

The new 8150, designated the A model, is a uniprocessor version of the dyadic 8150B introduced last fall (EN, Oct. 24, 1983). It provides half the power, half the communication ports and half the memory capacity of the 8150B. Because it lacks the 8150B's redundancy, system availability is less.

The 8150A comes in three submodels — A10, with one megabyte of memory; A20, with two megabytes; and A30 with three megabytes — priced, respectively, at $75,000, $82,500 and $90,000 on purchase. Respective rental rates are $4,265, $4,690 and $5,120 per month. Leasing is available through IBM Credit Corp.

Users can upgrade from the A models to B models, but an A20 is a prerequisite to making the change, the firm said.

The 8150A machines, which is

For the present, the 8102 requires DPPX/SP Release 2, IBM said, noting it intends to extend DPCX to provide 8102 support in a future release, at an unspecified date.

First customer shipments are planned in July for the 8100 PC adapter, which IBM said is a non-IBM logo product designed and developed by Integrated Network Systems (INS) Corp., Mobile, Ala.

The adapter, as previously noted (EN, Data Topics, Mar. 12), lists for $1,275. There are no rental or lease plans, not even through IBM Credit. For less than 20, IBM said customers should order through IBM directly via its 800 telephone number. More than that can be ordered through IBM marketing reps. Responsibility for the product within IBM rests with the recently-formed National Distribution

# Encore Scraps Advisor Role; Aims at Parallel Processors

By GARY McWILLIAMS

WELLESLEY, Mass. — Encore Computer Corp. has scrapped its original plan to seed and guide fledging firms in favor of a family of interconnected parallel processors it hopes to start bringing to market in 1985 and 1986, it was learned last week.

Charles T. Casale, vice-president of corporate affairs, admitted Encore has discarded its originally stated goals (EN, July 25, 1983). He declined to comment on current plans, however, except to say "Our business is building computers."

The firm, it was learned, has set up three development groups working on the proposed parallel processor family, which are to range from desktop models to large-scale systems.

Two additional development groups, focusing on graphics workstations and network communications products, are expected to be formed this year. Encore's computer strategy proposes introducing a family of Large Applied Multi-Processor (LAMP) systems based on 32-bit MPU technology in 1985 and 1986.

According to the firm's outline, details of which were obtained from industry sources, Encore has organized a loose grouping of engineering and marketing teams composed largely of associates or former coworkers of the firm's founders.

Encore was formed last year by former Prime Computer president Kenneth Fisher and executives from several major computer manufacturers including Prime, Data General and Digital Equipment Corp.

According to the Encore outline, its engineering orgnization now includes:

• Systems Development Co., the internal name for wholly-owned Hydra Computer Systems, Natick, Mass., which is building the firm's initial LAMP systems. Headed by former Digital Equipment Corp. manager David Schanin, Hydra is building the firm's mid-range LAMP systems, which consist of 10 to 100 processor modules connected via a common bus. Expected to be introduced early in 1985, the systems will compete against existing DEC, DG, IBM, Prime, and others' 32-bit computers. Systems Development also is responsible for the LAMP's Unix-based operating system, compilers and languages.

• Architectural Development Co., the firm's Pittsburgh operation which is staffed largely by Carnegie-Mellon University professors and students. Headed by Prof. Daniel T. Siewrorek, who is described as chief technical officer, the group is working on a 1986 introduction of large-scale parallel systems linking 100 to 1,000 processors. The group also is responsible for developing fault-tolerant transaction systems to compete against offerings by Tandem Computers, Stratus Computers, and others.

• Interactive Systems Co., a Wellesley, Mass., based development team that is building the firm's Mini-LAMP systems. Headed by former Prime vice-president Joseph D'Angelo, the group is building systems composed of one to 10 processors to compete against existing 16-bit and microcomputer time-shared systems. Its initial products are scheduled to be introduced in mid-1985.

According to the firm's outline, its strategy seeks to develop a limited number of standard modules that can be used by all its LAMP systems. It called the approach the Encore Computing Environment. The firm expects its systems' price/performance ratio to be about $20,000 per MIPS.

"By developing a limited number of standard modules, Encore believes it can avoid the redundant development costs often incurred in designing products for various capacities and capabilities. Individual modules include but are not limited to processor, memory, high-performance workstation controller, LAMP interconnection, peripheral controller, communications protocol and terminal concentrator modules," the outline states.

The firm's software strategy encompasses adoption of industry standard operating systems and communications protocols "enabling customers to continue using existing equipment and software with minimal inconvenience.

## ...n '83; Revenues Up 21%

...ed computer ...983, but does ...officials said.

...Lorentz, was last ...per cent from 60

...ent-sponsored re- ...French computer ...year took over ...pagnie Generale ...ransac from the ...o manufacturers ...n equipment and

...levelopment con- ...). with the French ...expects to reach ...by 1986, said Mr.

...e said, is aimed at providing a viable alternative to IBM and developing over-all integrated office automation systems compatible with those offered by other leading Western European companies.

Bull has taken a lead in the European Economic Community's 1984-88 "Esprit" Program for joint Western European R&D in information technology, which last month obtained 1.5 billion European currency units, equal to $1.27 billion in EEC funding.

The group, which earlier set up a joint research center with International Computers, Ltd. and Siemens and reached a cooperation agreement with Philips for its CP 8 memory card, recently signed an agreement with 11 other European companies for the adoption of common international communication standards for information technology.

SYSTEMS

## Elbit and Nicholas In U.S. Mktg. Pact

JERUSALEM (FNS) — Israel's Elbit Computers Ltd. this week signed a contract with Nicholas International of Florida for the marekting of a high range of Elbit products in the U.S.

Under terms of the deal, Nicholas will undertake to provide a U.S. outlet for Elbit's Anat computer series, which is compatible with IBM, as well as other data processing and communications systems.

Sources close to the Haifa-based computer firm, nearly three-quarters of whose output goes to satisfy military orders, said Nicholas could also help push Elbit products in other, unspecified parts of the world.

They noted that so far Elbit has lacked an outlet for its products in the U.S., although it has sold some military electronic equipment through American agents.

The new agreement will help Elbit expand its products in the civilian market. The company's sales this year are expected to exceed $115 million.

## Tandem Appoints N.A. Sales Mgr.

CUPERTINO, Calif. — Tandem Computers has named James Savacool manager of Northern American sales for the telecommunications industry, a new post designed to address potential sales to Bell and independent telephone companies.

# ComputerWeekly

Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS

p15

Thursday, March 29, 1984


# Panic strikes Wall Street's geese

SINCE the deregulation and breakup of US telecommunications giant American Telephone and Telegraph, it has been reckoned that the company would make a big move into the traditional data processing markets. Much already has been written of the coming battle between IBM and AT&T, which are expected to fight tooth and nail to assert their dominance as information technology companies.

This week AT&T finally made a major announcement of computer products. And on the eve of the announcement, a rather surprising event occurred.

New York brokers picked up news that the announcement was imminent, and passed the word to their clients. The result, according to one broker, was a mad rush of people falling over themselves to sell their shares in Digital Equipment.

Why sell DEC shares? The brokers predicted that the AT&T computer systems would include a minicomputer to compete with DEC's Vax line, and other competitive office automation products.

The New York Stock Exchange, overwhelmed by the surge in trading late in the day, suspended further dealings in DEC shares. The act is not without precedent, and the number of DEC shares actually traded, 216,000, was not outrageous. The shares closed down at just over one dollar for the day.

DEC was no doubt as surprised as we were.

The company has been having its ups and downs lately, but no-one could presume that AT&T's entry into the computer market would drive the second largest company out.

Maybe DEC should moan to the New York Stock Exchange about its inefficiency, and then attempt to sell it another computer.

Certainly, AT&T is going to send some feathers flying, and also as certainly, many investors are silly geese.

# Don't suppress facts

WHAT relevance does the Sarah Tisdall case have for the computer industry?

She is not a programmer, or a systems analyst. The "secrets" she passed on were not stolen from any computer.

Yet the issues surrounding the prosecution and imprisonment of Tisdall, who passed information to *The Guardian* about the delivery of cruise missiles to the UK, does concern our industry.

We agree with those who sense an increasing desire on the part of government to suppress information as to how and why it reaches particular decisions.

The present government, however, is going well beyond

## LETTERS

# Amplifying the case for Tandem NonStop kit

READERS of the notes taken from Gordon Bell's BCS Jubilee Lecture (*Computer Weekly*, March 15) could form too narrow a view, I feel, of Tandem's marketing of its NonStop computers.

Tandem certainly pioneered "reliable computing", and made a very good job of it. But to talk of us occupying a market niche is inappropriate, when the main competition is from IBM. In any case, it would be wrong to suppose that the main platform on which we operate is fault-tolerance.

Tandem offers modularity in its NonStop systems: a modularity that embraces both hardware and software. This means that users may expand their systems from two linked processors to (literally) several thousands.

So a big plus for Tandem is not only the fault-tolerant aspect of its system modularity, but the increasingly important capability to increase the installed system, or network of systems, without any change to the software, or disruption to the users.

More than ever before, Tandem is in the market of continuously expandable systems, and it will continue to grow through service of the needs of online transaction processing environments.

This amplification should help the readers of Gordon Bell's undoubtedly authoritative piece, I feel.

**PETER HERMON**
**Managing Director**
**Tandem**
**London SW1.**

# When to check references

CONGRATULATIONS to Alan Williams ("How to Identify Losers in Your Team", *Computer Weekly* March 8) for highlighting the usefulness of reference checks in the recruitment process. As a means of testing judgments made at interview they are invaluable. However, his analysis contains two assumptions with which I would disagree.'

First, the common excuse that the only pertinent reference is the applicant's present boss is just that – an excuse. With the current level of job mobility, the instances where it is impossible to obtain a reference from someone who has recently worked with (ideally over) the candidate are extremely rare.

Second, he ignores the emotio-

nal comm
is achiev
let alone
taken up
choice a
an arduo
if the cur
is a bad
manager
choice
previousl
chances
current
second ch
strength
over time
The an
ences bef
made –
current fir
ployers or
To do t
will not su
rees who
tham in g
(a) experi
out – on
cribed the
brilliant, c
(b) objecti
of a suit
previous e
suspicious
ing contact
Williams
recruitmen
herently le
of mankind
better posit
ment proce
that it desir

Houston Chronicle 3/18/84

# Treybig warms to running 'good, big' firm

BY BARBARA LONGEWAY
Chronicle Staff

James Treybig's new challenge is to link his 5,000 employees' minds in much the same way he got his unique mainframe computers to work — in Tandem.

"Managing diversity offers a far greater chance for creativity, but also a far greater chance of destruction," says Treybig, a graduate of Bellaire High School and Rice University who founded Tandem Computers Inc. in 1974. "But to stay successful, a large company absolutely must encourage different kinds of people to work together."

As his 10-year-old company edges toward a half billion in sales, Treybig's goals remain essentially the same as in 1978 (when sales were $24 million), but he says the skills needed to reach those goals have changed. He warms, he says, to the challenge of running "a good, big company" because only with the means of a large firm can true creativity take place.

"We've not only got to encourage and reward creativity, but also support failure," said Treybig, president of Tandem, which is based in Cupertino, Calif., in the heart of Silicon Valley. "And, we've got to control it."

Tandem sells what it calls Nonstop computers, which have at least two modular central processors linked together through software that switches control back and forth according to need. Thus, Tandem computers can continue to operate when one of the processors has broken down and is being taken apart and repaired. (It also has a built-in battery for power failures.)

This "non-stop," or fail-safe, aspect is particularly valued by industries needing to assure continuous service (such as hospitals and newspapers) or protect vital records (such as banks, stock exchanges and the federal government).

As these sectors of the economy have grown, so has Tandem. Its 1978 revenues of $24 million swelled to $418 million by the end of fiscal year 1983.

"Tandem's focus is increasingly oriented toward meeting the needs of large-enterprise users with massive networks employing thousands of terminals and hundreds of communications lines," said analyst Gordon Casey in a recent report for the New York investment firm of Drexel Burnham Lambert.

Texas Commerce Bank's automated teller system, for example, is run by a Tandem central processing unit, as are several of the new oil company automated gasoline pump systems and the New York Stock Exchange. The firm has some 5,900 processors installed for 725 customers.

At its inception, Tandem approached a virgin market — there were no other firms offering products that were non-stop, guaranteed data integrity and offered modular expansion from a single mainframe to a geographic network of 255 systems with 16 processors each.

Today, however, with Tandem subsidiaries in 18 countries and distributors in 12 more, competition is said to be emerging not only from computer giants such as International Business Machines, but also small firms comprised of former Tandem employees such as Stratus Inc. of Natick, Mass.

While Casey believes that the large firms may not introduce a completely new series of processors to compete with Tandem, he says that the concept of a failure-proof central processor will become a key consideration in systems design during the 1980s.

Treybig says, however, that any firm eight or nine years ahead of its competition needs worry only about keeping its house in order to stay ahead.

"No company that far ahead ever got caught unless they screwed it up themselves," Treybig said.

Casey notes that deteriorating economic conditions and a problem with the timing of revenue recognition squeezed 1983 results (to growth of only 35 percent), but that he expected the firm's recent consolidation of administrative functions to "significantly improve" the outlook for 1984 and 1985.

Treybig — who acquired an MBA from Stanford University and then worked as a marketing manager for Hewlett-Packard and for the San Francisco venture capital firm of Kleiner, Perkins, Caulfield & Byers — maintains that a company's growth goals should be predicated on how fast it can "grow" people, rather than vice versa.

"To project revenues, you start with how many people you can hire to do a good job for you," Treybig said. "Then, productivity times people equals revenues."

"The company is committed," Casey says, "to a wide variety of advanced and unorthodox management and personnel practices."

In its new terminal production facility in Austin, for example, each terminal unit is made — and signed — by one person. Because most production and performance data is available from a host computer in the factory, line workers have access to the data and responsibility for collecting and tracking it.

Tandem gives this worker participation much of the credit for the output (supposedly five times higher than might be expected from a traditional factory) and the fact that none of 20,000 units shipped so far has been what the company called DOA (dead on arrival).

Tandem's personnel policies (liberal even by Silicon Valley standards) are partially credited with the 10 percent turnover the firm experiences, compared to the 30 percent industry norm. The company swimming pool, volleyball courts, and regular parties are legendary and Treybig insists on six week sabbaticals for each employee every four years.

Financial analysts are predicting $1 billion in sales by 1986-87, but Treybig notes that the goals of Tandem are differ from mere "growth." They encompass, he says, happy customers, satisfied employees, "reasonable" profits and "quality in all things."

"What counts," Treybig says, about a $1 billion company, "is that when you get there, you're still doing things right."

James Treybig, founder of Tandem Computers Inc., returned to Houston recently to advise the faculty of the George R. Brown School of Engineering at Rice, from which he graduated in 1964.

# Economic Newsletter

## There's much glee for 1983...

A year of strong growth concluded the 1983 DATA COMMUNICATIONS Index (see graph on next page). December recorded a 1.8-percent gain; the year ended 7.6 percent up on December 1982, an even more notable gain in recent months, since the first third of the year was a 2.1-percent decline. All significant components of the index are very strong. In particular, shipments of communications equipment were up 7.3 percent in November on top of October's 9 percent surge. However, the next few months may show more moderate growth. The recent sharp rise resembles expansion of a spring; it has finite energy before having to be wound again.

## ...even though the market didn't think so

Every time a data communications entrepreneur seeks venture capital, he or she should remember this basic economic truth: Investors measure ideas in terms of expected return, not in terms of major technical breakthroughs. A perfect illustration: Dento-Med (a manufacturer of false teeth) and Pasquale Foods (pasta and pizzas) were among the 10 top gainers on the over-the-counter stock market last year. Not a single data communications company made the top 10. Unfortunately, data communications took 60 percent of the bottom 10: Vector Graphic (microcomputers and peripherals), down 83 percent; Tocom (videotex), down 72 percent; Tanno (marine computers), down 71 percent; Xonics (medical computers), down 69 percent; Harris & Paulson (legal computers), down 68 percent; and Computone Systems (microcomputers), down 67 percent.

## The top five data stocks

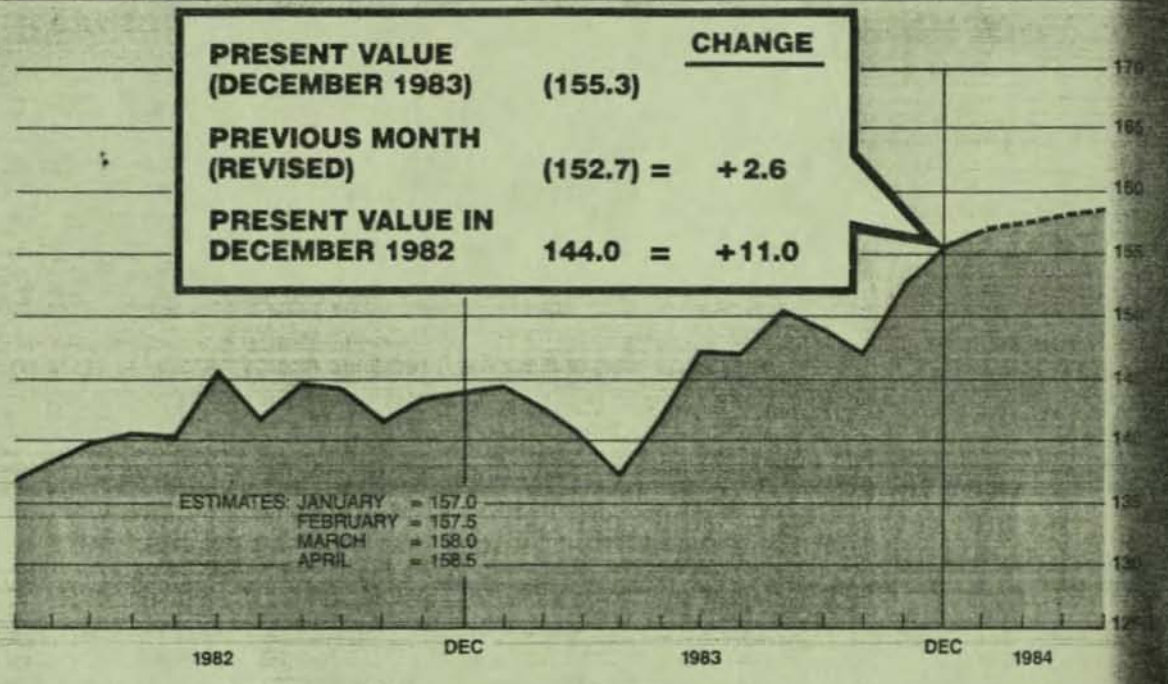
Still, investors in many data communications stocks did well over the long haul. CompuServe, the timesharing and network management firm based in Dayton, Ohio, recently did a computer screening of the trading gains (adjusted for stock splits) of data communications companies that have gone public in the last eight years (offerings of less than $5 million were screened out). The biggest gainer from its first day of trading until the end of 1983 was Rolm Corporation, which went public in September 1976. Its stock has gone up 2,779 percent since then. The top five: Rolm, Cray Research (2,428 percent), Digital Switch (1,805 percent), Tandem Computers (1,732 percent), and Cullinet (1,530 percent). Apple Computer—once the top glamour stock—was up only 10.8 percent at year-end 1983 from when it went public in 1980.

## A surge in software mergers

Put together market blahs and long-term value, and what have you got? A surge in corporate mergers, that's what. The Association of Data Processing Service Organizations (ADAPSO), in conjunction with the merger and acquisition consulting firm Broadview Associates, counted 146 mergers worth $1.01 billion in the computer services sector of data communications last year. That's a 132 percent increase over the $436 million in 1982. Interestingly, the largest subsector on this list was software, with mergers of software firms accounting for 60 percent of the total.

# Data Communications Index

**The DATA COMMUNICATIONS Economic Index is a seasonally adjusted measure of market demand for data communications goods and services. It is a weighted average of economic indicators, including consumer spending for financial services at commercial banks, the value of new-office and other construction in place, the level of available reserves at banks that are members of the Federal Reserve System, and shipments of transportation equipment. As a reference point, the average of all months in 1977 equals 100.**




## DATA COMMUNICATIONS MONTHLY INDICATORS

| | CURRENT MONTH* | REVISED PREVIOUS MONTH | YEAR AGO |
|---|---|---|---|
| SHIPMENTS OF COMMUNICATIONS EQUIPMENT<br>*U.S. DEPARTMENT OF COMMERCE, BILLIONS OF DOLLARS* | 4.830 | 4.500 | 3.718 |
| PERSONAL CONSUMPTION OF FINANCIAL SERVICES AT COMMERCIAL BANKS<br>*U.S. DEPARTMENT OF COMMERCE, BILLIONS OF DOLLARS* | 41.800 | 41.200 | 35.739 |
| PERSONAL CONSUMPTION OF TRANSPORTATION SERVICES<br>*U.S. DEPARTMENT OF COMMERCE, BILLIONS OF DOLLARS* | 77.806 | 76.272 | 69.045 |
| RETAIL SALES TOTAL<br>*U.S. DEPARTMENT OF COMMERCE, BILLIONS OF DOLLARS* | 102.059 | 101.981 | 92.459 |
| PRIVATE COMMERCIAL CONSTRUCTION PUT IN PLACE<br>*U.S. DEPARTMENT OF COMMERCE, BILLIONS OF DOLLARS* | 38.100 | 38.000 | 36.934 |
| SHIPMENTS OF TRANSPORTATION EQUIPMENT<br>*U.S. DEPARTMENT OF COMMERCE, BILLIONS OF DOLLARS* | 23.169 | 21.838 | 16.120 |
| INDEX OF LEADING ECONOMIC INDICATORS<br>*U.S. DEPARTMENT OF COMMERCE (1967 = 100)* | 162.9 | 161.9 | 140.9 |
| INDUSTRIAL PRODUCTION INDEX<br>*FEDERAL RESERVE BOARD (1967 = 100)* | 156.9 | 156.1 | 135.2 |
| BUDGETED OUTLAYS BY THE FEDERAL GOVERNMENT<br>*U.S. DEPARTMENT OF THE TREASURY, BILLIONS OF DOLLARS* | 74.702 | 67.792 | 72.436 |
| PRIME LENDING RATE<br>*FEDERAL RESERVE BOARD, MONTHLY AVERAGE* | 11.00(1/84) | 11.00(12/83) | 11.16(1/83) |
| OPERATING RATE, ALL INDUSTRIES (A PERCENTAGE BASED ON 100 OF WHAT THE NATION'S INDUSTRIES CAN PRODUCE )<br>*DATA RESOURCES, INC., McGRAW-HILL* | 78.9 | 78.7 | 68.6 |

***CURRENT MONTH IS DECEMBER 1983, PREVIOUS MONTH IS NOVEMBER 1983, YEAR AGO IS DECEMBER 1982, UNLESS OTHERWISE INDICATED.**

SJ Mer News 3/28/84 p1 G

# Busines

## Financial Digest

# State gains more jobs than lost in recession

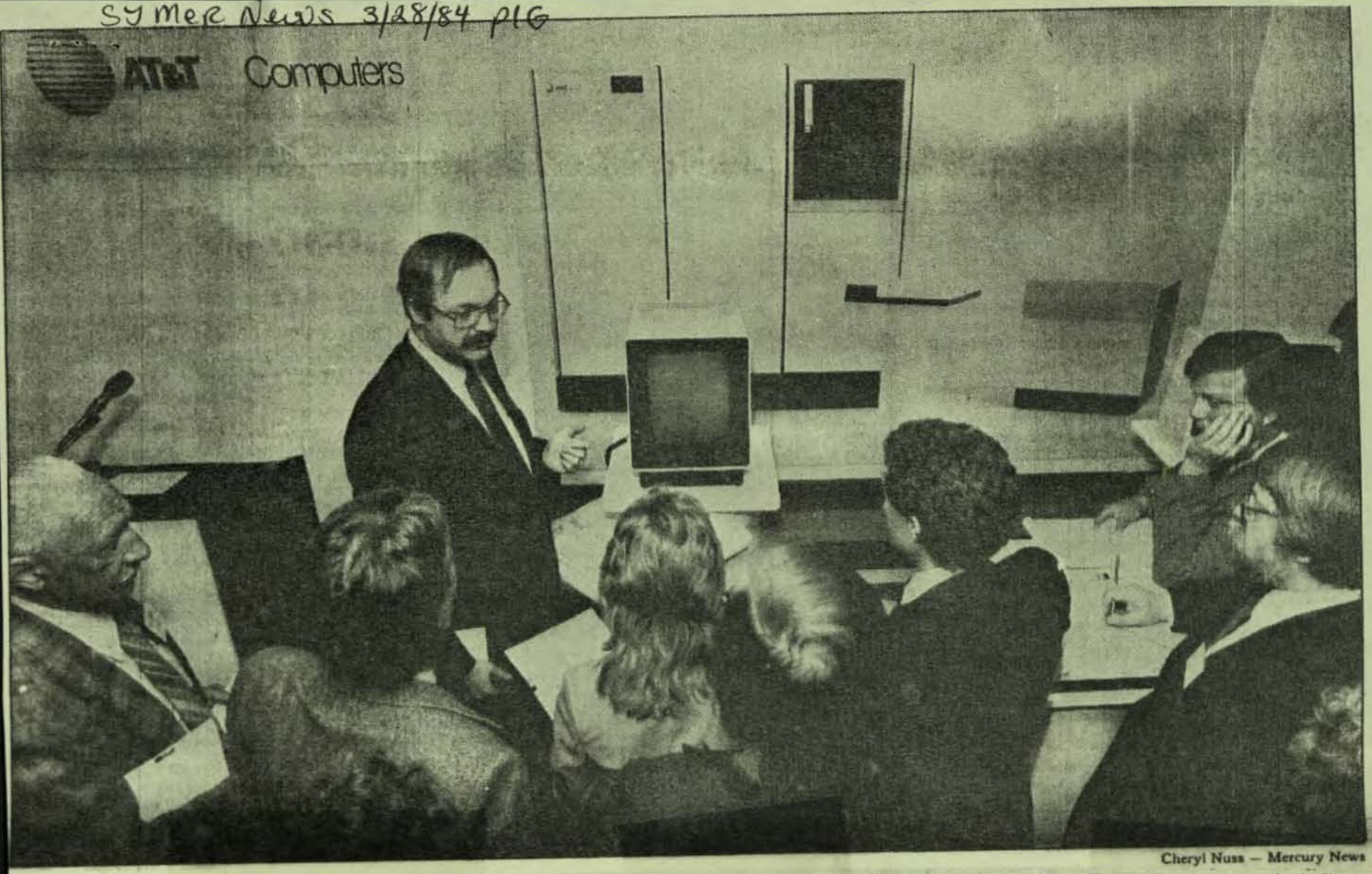
In the past 15 months of economic recovery, California has added almost 50 percent more jobs than it lost during the latest recession, according to Security Pacific National Bank.

"Essentially, we've regained all the jobs lost during the recession and added an extra 151,900 new jobs for California workers," said Mario Menchini of the economics department of the Los Angeles-based bank.

Menchini said 290,500 jobs were lost during the 17-month recession. But in the last 15 months, about 442,400 jobs have been created in the state as the economy turned around, he said.

"There are some industries that have recovered fully — such as construction and manufacturing — but certain key industries have been adding to their payrolls steadily over the past few months," Menchini said. The biggest increases, he said, were in wholesale and retail trade, business services and electronics.

SJ Mer News 3/28/84 p1G




Cheryl Nuss — Mercury News

Steve Sommars of AT&T's technical staff shows off new computer at the company's San Francisco press briefing

# AT&T unleashes its new computers

## Some products aimed at H-P, Tandem and other Silicon Valley firms

By Mary A.C. Fallon
Business Writer

SAN FRANCISCO — American Telephone & Telegraph Co. vaulted into the computer marketplace Tuesday by introducing a family of six computers and two network systems.

AT&T had been prohibited by federal regulations from selling computers commercially even though it had been a leader in computer technology development for 40 years. But in January, when AT&T's regional telephone operations were spun off from the company, the ban on selling computers was lifted.

The new products compete directly with some Silicon Valley manufacturers, including Hewlett-Packard Co. of Palo Alto, Convergent Technologies Inc. of Santa Clara and Tandem Computers Inc. of Cupertino.

"AT&T is a big elephant putting one toe in the water to see if it can swim," said Stephen P. Cohen, vice president of the Gartner Group, a market researcher based in Stamford, Conn.

Industry analysts are divided on whether the mammoth telecommunications company has the selling savvy to compete against giants such as International Business Machines Corp. and Digital Equipment Corp. As its first computers, AT&T is offering 32-bit products ranging from a powerful desk-top microcomputer at $9,950 to a high-end supermini computer at $340,0000. AT&T's guns are aimed at the office automation market.

By the end of this year, analysts say, AT&T will introduce a personal computer to be sold for under $5,000 at its retail telephone stores. There is also speculation that AT&T will introduce other products this year, including a workstation and a portable computer under development at Convergent Technologies.

A range of applications software developed in conjunction with other companies also is expected.

James E. Olson, AT&T vice chairman, neither confirmed nor denied analysts' speculation. The company told reporters to "stay tuned to this station for further announcements."

All the computers AT&T introduced Tuesday are

*Continued on Page 2G*

# AT&T unveils its new line of computers

*Continued from Page 1G*

being used by the company internally. AT&T said it brings no new technology to the industry. All the new products run on AT&T's proprietary 32000 microprocessor, which is state-of-the-art technology.

"We're very impressed with the research and development capability that Bell Labs (AT&T's research arm) brings to the picture," said Ed McCracken, H-P's general manager of business development. "We think they will be a significant factor."

Tandem — which is likely to be most affected by AT&T's top-of-the-line, fault-tolerant minicomputer — doesn't see that the AT&T name will be a strong selling point in selling equipment to original equipment manufacturers, said Dennis McEvoy, Tandem vice president..

AT&T's advantage is that all its new computers run on its UNIX operating system software. Operating systems enables the processor to perform data processing and control functions. UNIX is becoming the standard in the minicomputer industry. About 70 companies, including DEC and IBM, incorporate a version of UNIX in some of their computers.

Analysts question whether "the telephone company," a novice in a fast-moving market, can produce products at a lower price and sell them against entrenched minicomputer leaders.

AT&T's announced prices and products nearly match those of DEC's VAX line of minicomputers, analysts say. However, DEC trails price leader Data General Corp., they say.

"Being comparable to the leader isn't good enough," said Cohan of the Gartner Group. "They don't have a big 'in' on price performance."

Olson said AT&T will sell its computers to three markets: original equipment manufacturers; value-added resellers, which add features to the machines and then resell them to the actual users; and a limited number of "sophisticated end-users running UNIX."

AT&T must go to the OEM and value-added resellers first since it has little applications software to sell with its computers. Those buyers would add applications software along with other features before selling them to the public.

Analysts don't expect AT&T to be selling to end-users for some time.

AT&T touted its "decades of experience" at selling telephones and other telecommunications equipment when asked if it can sell computers.

Not all observers agree.

"They have been order takers for telephones," said Bob Fleming, telecommunications analyst for the Gartner Group. "The people who buy telephones are not the same people who buy computers. Their sales people are not oriented to selling computers."

Bill Frank, senior vice president of InfoCorp. in Cupertino, doubts AT&T's marketing strength.

"Bits, bytes and technology isn't everything," said Frank. "Marketing, service, support and sales are the keys. That's why IBM, without the most exciting products in the world, roars along."

AT&T's Communications Division has only 34 sales people selling its telecommunications products to value-added resellers, one analyst said. But the company plans to retrain 6,000 sales and technical employees for its computer business by the end of this year, Olson said. So far, the company has trained about 800 salespeople and technical consultants, he said.

"AT&T will be a serious competitor in the long term, but not immediately," said David C. Moschella, market analyst with International Data Corp. of Framingham, Mass. "They are only pushing to the OEMs while Digital Equipment and Data General are putting more attention on end-users, which is generating more profits and revenues."

Analysts say they don't know which original equipment manufacturers would buy from AT&T or how many computers AT&T will manufacture.

The industry has known for more than a year that AT&T would jump into the computer industry. Eighteen months ago, it began marketing its latest version of UNIX, called System V. AT&T said the computers introduced Tuesday will run on the same UNIX System V operating system that AT&T licenses to other minicomputer companies.

"There are only minor differences" on the UNIX system in the new products compared with the version other companies are using, said Jean Yates, president of Yates Ventures of Los Altos, a software market research firm. "AT&T wants Bell UNIX to be an absolute standard and won't do anything to undermine it."

Software writers would back off from writing applications software for AT&T computers if the company used a UNIX system that differs vastly from what other companies are putting in their machines, she said.

Yates has no doubts AT&T will succeed. "They have a long way to be sophisticated marketers but they have a lot of money and influence," she said. "They are doing a lot of things right and they have immediate credibility because of the reliability of the telephone system."

ComputerWorld 3/19/84 p75

# Fault-tolerant superminis offer Unix support

SAN JOSE, Calif. — Tolerant Systems, Inc. has announced the Eternity series of fault-tolerant, 32-bit superminicomputers. The systems were designed to use a version of the Unix operating system.

Designed for use in on-line transaction processing applications, the system reportedly offers performance comparable to Digital Equipment Corp.'s VAX-11/780 superminicomputer. The Eternity series consists of from one to 15 system modules called system building blocks (SBB). The SBBs are connected by a passive coaxial cable called the system interconnect bus, the vendor said.

Any SBB within the system can perform one or more distributed system tasks such as application processing, file serving or communications serving. Each SBB can contain from 1M to 16M bytes of random-access memory. Internal processors, such as a user processing unit and a real-time processing unit, are based on National Semiconductor Corp.'s NS32032 microprocessor. Each SBB contains two 32-bit processors, the vendor said.

One of the benefits of the Eternity system, the vendor claimed, is that the configuration of SBBs can be redefined to suit the application. For example, a system requiring heavy I/O traffic could focus more SBBs to file serving instead of applications processing. In addition, if more processing capacity is required, additional SBBs reportedly can

See **SUPER** page 79

## SUPER from page 75

be added without taking the entire system off-line, the vendor said.

An Eternity system can handle three compatible types of storage module drive disk subsystems offering capacities from 84M to 474M bytes.

Drives can operate at an average access time of 20 nsec and can achieve data transfer rates of 1.2M to 1.8M byte/sec, the vendor said.

The Eternity version of Unix is compatible with the Western Electric Corp. System V and the University of California at Berkeley Versions 4.1 and 4.2.

Designed primarily for systems integrators and value-added remarketers, an entry-level configuration costs $75,000. The vendor is located at 81 E. Daggett Drive, San Jose, Calif. 95134.

# Management

# Companies find travel can be an effective incentive

By Dedra Hauser
Business Writer

As a reward for being chosen one of the Tandem Outstanding Performers, Roberta Naylor and her husband went on a company-paid trip to New Orleans last week to celebrate Mardi Gras. Back in her office this week, Naylor says the best part of the TOPs trip was the chance to meet the 60 other Tandem Computers Inc. employees and their spouses who went on the trip.

"I really think I learned more about the company," says Naylor, an administrative supervisor for software development. "And now I feel I really have to show I deserved to be chosen."

The Cupertino computer maker is one of the few companies in the Valley to use this incentive approach. And it's one of only a handful nationwide to offer travel incentive programs to general employees as well as salespeople.

U.S. companies spent about $1.3 billion on incentive travel programs last year, according to travel industry estimates. While relatively new to the Bay Area, travel incentive programs have been in place for years at many eastern and midwestern companies in the insurance, automobile and farm equipment business, says Donna MacMillan, director of sales for Casto/GTU Meeting Planning & Incentive Travel of Santa Clara.

Each company does them somewhat differently, but MacMillan says travel incentive programs generally have these features in common:

✔ To qualify for the trip, employees usually have to meet or exceed certain goals.

✔ In addition to the trip, companies often reward employees with a plaque or other gift that is presented during the trip.

✔ The trips are designed to give employees a chance to meet and mingle with top executives and co-workers, both informally and at business meetings.

✔ They're typically organized around a series of special events and entertainments ranging from sports competitions to gala parties.

"Everyone needs to get strokes and to feel important, and a well-designed trip does this."

*— Donna MacMillan, director of sales for Casto/GTU*

Local companies that have incentive travel programs include Rolm Corp. of Santa Clara, Ask Computer Systems Inc. of Los Altos, and Calma Co. of Santa Clara, a subsidiary of General Electric Co.

One local company that looked at travel incentive programs and decided against them is Televideo Systems Inc. of Sunnyvale. "We felt that other programs give you more for your dollar," says a Televideo spokesman.

Lockheed Missiles & Space Co. of Sunnyvale hasn't seriously considered the program, because it would be difficult to administer at a company whose main customer is the federal government, says spokesman George Mulhern. "It's so hard to say that certain individuals are the ones that made a given program go when so many people are involved," he says.

A company trip is a more meaningful and memorable reward than a cash bonus for many employees, MacMillan says. "Everyone needs to get strokes and to feel important, and a well-designed trip does this," she says.

And the trips do more than just reward and motivate individuals, she says. They are an opportunity to foster employee identification with corporate goals and values.

By bringing together everyone from an assembly worker to a manager, Tandem's recent trip to New Orleans helped create a sense of equality, says Kathryn Weiner, a manager of marketing support at Tandem. Weiner went to New Orleans as one of several guest managers to give business presentations to the TOPs participants.

Weiner says top performers don't need a trip to motivate excellence. But the trip "really enthused them," she says. It also motivates the rest of the workforce who'd like to be chosen for the TOPs program, she adds.

Naylor of Tandem says the entire New Orleans trip was "unbelievably fantastic," from the riverboat ride down the Mississippi to the plantation barbecue. But the highlight of the trip for her was a wedding reception held for a Japanese Tandem employee who wanted to get married in the U.S.

There is a growing trend to reward operational employees with trips, says Elaine Macy, a vice president in the Larkspur office of GTU. "I think it's an even greater reward for operational people, who work inside all day long and don't get to travel like salespeople do," she says.

But it is harder to select people for a travel incentive program when there are no concrete criteria like sales quotas.

Calma broadened its incentive travel program this year to include operational people, says Virginia White, manager of corporate sales programs. But she says the program is "a nightmare to administer when you aren't selecting people according to quantitative criteria."

Companies can set up a travel incentive program so that it at least pays for itself through increased sales, says Linette Young, who administers one of several travel incentive programs at Rolm. "People who participate in our program have paid the company back at least twice what it's going to cost to have the trip," she says.

It typically costs between $1,000 and $1,500 per employee for a travel incentive trip, Macy of GTU says. But she encourages companies to run less costly programs more often. The key to making a trip successful is to know your goals and gear the trip to the age and personality of your work force, she says.

In the case of local companies, that often means planning an active trip built around sports and designed to foster camaraderie. "People in the valley tend to be young and highly competitive," she says.

Corporate Times March 1984 p11

# Tandem Computers introduces voice option

CUPERTINO – Tandem Computers, Inc. has introduced a Voice Input Option for the company's 653X terminal family which allows terminal operators to use speech as an alternate means of entering data into Tandem NonStop systems. With Voice Option installed, 653X terminals retain their standard keyboard and display characteristics, but allow operators to input pre-programmed vocabulary words via microphones "faster and more accurately than with a keyboard."

According to Tandem President and Chief Executive Officer James G. Treybig, the Voice Option is ideal for transaction processing application in which the operator's hands are busy sorting or inspecting, such as in manufacturing environments. Examples of these applications include inventory control, production tracking and distribution. The Voice Option is fully compatible with existing application programs that run under Tandem's systems software products.

Users of Voice Option define their own vocabularies on templates of up to 200 words each. The system is a speaker-dependent word recognizer – meaning each terminal must be trained to recognize the voice patterns of its individual operator. To train the terminal, the operator generates a set of voice patterns for words contained in each vocabulary template to be used. The voice patterns are then stored in the NonStop system and downloaded into the terminal when that particular operator begins to work.

Terminals can hold one template at a time, but can contain commands for downloading other templates. As a result, overall vocabulary sizes are limited only by the amount of system disc space the user wants to devote for storage.

Vocabularies can be in any language and can represent words or command phrases. Each template can contain up to 3,400 bytes. Recognition accuracy can be as high as 99%, depending on the user-selectable reject threshold.

The Voice Option was introduced February 10th during a press conference held at Tandem's corporate headquarters. First customer shipments of the Voice Option will be in April, 1984, with U.S. pricing set at $1,800 in single quantities with quantity discounts available.

Tandem developed the Voice Input Option in conjunction with Interstate Electronics, based in Los Angeles. Interstate developed the chip set for voice recognition and designed it to be compatible with the Tandem system.

Tandem also announced the expansion of its line of ergonomic terminals with the introduction of two new models, the 6531 and 6532, and reduced the price of the existing 6530 terminal. The new models, in addition to the standard features offered on the 6530, have been designed to take up less counter or desk space. Both new models offer detachable CRT monitors which can be placed up to six feet away from their corresponding electric boxes. The 6531 CRT monitor measures 12 inches diagonally; the 6532, nine inches diagonally, and the original 6530 measures 15 inches.

Tandem has targeted the original 6530, with its 15-inch screen, for terminal-intensive applications such as data entry, where operator comfort is essential when using the terminal for six or more hours daily.

The 6531, with its smaller 12-inch screen, would be used in applications characterized by decision-making activity, such as "what if" queries used in financial and inventory management, where the operator would be spending less time at the terminal. continued on page 31

# Tandem Computers introduces voice option

continued from page 11

The 6532, with its nine inch screen, is targeted for applications such as reservation and retail counter where space is at a premium.

First customer shipments of the new 6531 and 6532 terminals were in February, with U.S. pricing set at $21,00 and $1,950, respectively. The 6530, first shipped in December, 1981, has been reduced in price to $2,300.

Tandem also announced it has enhanced the functionality of the entire 653X family with the introduction of the EM 3270, which emulates the IBM 3270 Information Display Systems and a letter quality printer, the 5530. The 5530 is a 55 character per second daisy wheel printer with features including multinational character sets, programmable line spacing and automatic paper feed for unattended printing.

# Voice of the Valley

## Don C. Hoefler

Corporate Times March 1984 p2

*Don C. Hoefler, often acknowledged as the Herb Caen of the semiconductor and electronics industry, provides the latest Silicon Valley scoop every month. Don't miss Don's controversial profiles on industry leaders, companies, and action.*

**Other Side of the Coin . . .** After lambasting the Valley for some of its pecadilloes last month, I hasten to call attention to some of its good points. Silicon Valley is a great place to work, largely because of its enlightened management.

One of the most interesting concepts—widespread recreational facilities—began in 1962 at **Tempress Research,** where a fun-loving president named **Frank Christensen** installed a giant trampoline, horizontal bars, tumbling mats and exercise equipment. Outside was a touch football field and volleyball courts.

This was all rather rudimentary in a rented building in Sunnyvale, but as Frank planned a new building in Los Gatos, he dreamed of an elaborate health facility for all employees. The building would house a large gymnasium, with health spa equipment, including steam rooms and lockers. Outside would be a swimming pool, touch football field, volleyball and basketball courts, and picnic areas.

But when he tried to get funding for the facility, the bankers all said he was crazy. Then the **Bank of America** agreed to a loan, provided on the blueprints Frank called the gymnasium a "storage area" and labeled the outside facilities "future growth."

Hardly had the building opened, however, when bank officials were constantly booking plant tours, to show it off as an example of enlightened banking foresight.

Today many descendants of Frank Christensen's pioneering spirit are to be found throughout the Valley.

Every Friday afternoon at **Tandem Computer,** the 1500 employees are invited to a beer bust on the company in the cafeteria. There people from the factory floor rub elbows with engineers and managers. The function is not merely social, but to foster communication and democracy in the workplace.

**Tandem employees** also get a paid six-week sabbatical every four years, yearly stock options, and other inducements designed to make them feel a part of the venture.

Friday afternoons at **Atari** in **Nolan Bushnell's** day took on a different coloration. According to reliable sources, at 3 o'clock all work would cease, and the entire joint would turn into an adult playground.

At **Hewlett-Packard,** a democracy is stretched to the ultimate, where it is difficult at a glance to distinguish the bosses from the workers. Almost nobody has an office. What partitions there are, are only chest-high, and easily movable.

Coffee and snacks are on the house.

Some companies are trying to rub out the employment hills and valleys by retaining the full work force without layoffs in bad times. **Advanced Micro Devices** has been among the most successful in this regard, although they have had some terminations due to retrenchment.

And although **National** is often referred to as the "blockhouse," it has a full-time Director of Recreation.

**Rolm** has gone a step beyond the original Tempress concept, with campus-like grounds, crossed by streams and covered walkways. Workers eat subsidized meals in a company cafeteria that looks more like a restaurant. They choose their own work hours, and play in a company recreation center that includes two swimming pools, volleyball and racquetball courts, and offers training courses ranging from skiing to pregnancy care.

Rolm also has a Continuous Service Leave program, in which employees can take as many as 15 consecutive weeks off, every seven years.

Of course, low partitions also make it easy for bosses to monitor workers. There was the time when National's **Charlie Sporck** caught an engineer reading the Wall Street Journal in his cubicle. Sporck wheeled around and cautioned the miscreant: "None of that on my time."

**At AMD, Jerry Sanders** is a highly visible and approachable president. he has time for any employee, to discuss anything on his or her mind.

A couple of years ago he gave away a house, won in a drawing by a young fab worker. This year he has promised every employee an additional week's pay if AMD sales reach $400 million between April and September (covering the slow summer months), and yet another week's pay if sales reach $500 million in the following six months.

Although **Intel** has no recreational facilities, it is a free and open society, where all employees are encouraged to speak their minds, no matter who gets his feathers ruffled.

Not that all this camaraderie is purely eleemosynary. It has a more subtle purpose, and that is to stave off union organization. In that companies have been highly successful. Unions have never won an election in the Valley except at **Lockheed** and **Philco-Ford.** And they have tried often. **Raytheon** has been a repeated target, but all organization efforts failed.

But now an update on Tempress and Frank Christensen. The company was sold in 1971 to **Sola Basic Industries,** which in turn was acquired by **General Signal.**

And did this fine old eastern company continue Christensen's policies? Not on your tintype. The philosophy quickly became, "If the company is so profitable now, think how much more profitable it will be when it stops spending all that money on folderol."

So did the company become more profitable? Negative. Instead the former Tempress went out of business, its product lines and patents dissipated.

Frank Christensen now operates **Christen Industries** of Hollister, which makes aerobatic aircraft. And Frank Christensen is still employee-directed.

**See you next month.**