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Keeping in Touch

More Corporate Chiefs Seek Direct Contact With Staff, Customers

One Executive Interviews Employees at Breakfast; Others Try Spot-Checks

Handpicking Boss's Potatoes

By Thomas F. O'Boyle
And Carol Hymowitz
Staff Reporters of The Wall Street Journal

WASHINGTON – J. Willard Marriott Jr., the chief executive officer of Marriott Corp., is wandering around the basement of his flagship hotel here. Randomly yanking a dinner plate out of a storage cabinet, he spots a splotch of dried food. "You really ought to soak some of these dishes," he reminds the hotel manager.

In Cupertino, Calif., James G. Treybig (pronounced try-big), the chief executive of Tandem Computers Inc., is peering into a computer terminal scanning the complaints and suggestions that he has solicited from managers and production workers.

And halfway across the world in Taiwan, Joseph A. Baute, the chief executive of Markem Corp., listens to a customer's complaint that orders of Markem's labeling machines aren't arriving on time. Within minutes, Mr. Baute is telephoning company headquarters in New Hampshire rearranging deliveries.

Firsthand Knowledge

These executives are among a small but growing number of corporate chiefs who are determined to know firsthand exactly what is happening at their companies and who are willing to go out of their way to find out. As a result, they are breaking with management practices in vogue since the 1950s that emphasized an aloof, rigid financial analysis rather than direct contact.

Many chief executives are content to remain in headquarters suites, insulated from the day-to-day workings of their corporate kingdoms. Their information is gleaned from committee reports and financial statements, or it is passed on by layers of lower managers, who often filter out the bad news.

"The No. 1 managerial productivity problem in America is, quite simply, managers who are out of touch with their people and customers," asserts Thomas J. Peters, a management consultant and co-author of "In Search of Excellence." "The alternative doesn't come from computer printouts," he says. "It comes from wandering around, directly sampling employees' environments."

Many executives say they do that. But all too often, their visits to company facilities are mere formalities that yield little insight or new information. "It's easy for them to delude themselves into thinking they know what's going on, but it's a tremendous misconception," says Ralph Kilmann, a University of Pittsburgh business-school professor. Mr. Kilmann recalls an executive who described visits to several plants in which he waved to employees but never got out of his limousine.

Promotes Loyalty

The chief executives who reject this isolation often head new high-technology and service companies, rather than more mature—and more traditional—manufacturing concerns. Some have built their companies from scratch. They see management informed by firsthand knowledge as critical to forging a corporate environment that promotes employee and customer loyalty.

The executives have distinct styles of intelligence gathering. John Sculley, the president and chief executive of Apple Computer Inc., listens to customer complaints on Apple's toll-free 800 number, and insists that other top executives do the same. John B. McCoy, the president of Banc One Corp. in Columbus, Ohio, reads "exit" interviews with employees who leave the company.

Richard G. Rogers, the president of Syntex Corp., a pharmaceutical maker, eats breakfast each morning at 7:30 in the employee cafeteria in Palo Alto, Calif. Over coffee and toast, he queries employees, and in exchange he is often asked to give career counseling and advice.

Of course, this direct approach can't replace financial analysis and other standard management tools. There is also a risk that executives who spend too much time gathering minute details may miss the broader picture. Then, too, actually obtaining reliable information can be difficult because employees, fearing retaliation, may withhold or distort facts.

False Data

Sometimes information gathering can border on spying. A chief executive at a publishing company used to read the messages that employees had left in the company's computer system. A chief executive at a large Midwestern manufacturing concern acknowledges that during a strike he got information from certain managers who were friendly to the union and used those managers to transmit false information he knew would frighten the strikers. The false information involved the suggestion that the company planned to contract out work to nonunion employees.

Nevertheless, experts say, management based on direct knowledge offers benefits that outweigh being aloof and out of touch. The advantages are apparent at Marriott Corp., where the practice is a family tradition begun by J. Willard Sr., Mr. Marriott's father. With his wife, Alice, the senior Mr. Marriott visited his Hot Shoppes res-

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Keeping in Touch: More Corporate Chiefs Now Seek Direct Contact With Their Workers and Customers

Continued From First Page

taurants constantly, ordering meals, talking to customers and employees, even rummaging through garbage cans to check for waste.

Now the Marriott empire is a lot bigger. The younger Mr. Marriott, now 52 years old, estimates he logged 200,000 miles last year visiting more than 100 of the chain's 141 hotels and resorts.

Often he checks out his hotels at odd hours: midnight in the kitchen, for instance, or 5 a.m. in the laundry room. "When you start trying to anticipate what he'll find, you get better as a manager," says John Dixon, the general manager of the new JW Marriott hotel here.

On a recent visit, Mr. Marriott found plenty. Seconds after entering the atrium-style lobby, his eyes darted left to a pink marble pillar. On a visit to the hotel a few weeks before, Mr. Marriott had noticed an unwaxed strip about half an inch wide circling the pillar's base. "I see you cleared up that problem. Looks good," he said approvingly, shaking Mr. Dixon's hand.

A few minutes later, Mr. Marriott was in the kitchen. Looking like a man running for office, he greeted about a dozen employees with firm pumps of the hand, a broad smile and a "Hi, how ya doin'?" He addressed a few of the old-timers by their first names and embraced one.

Then he grimaced as he discovered a batch of hash browns left over from breakfast two hours earlier, a violation of one of the strict written rules that dictate food portions and preparations. "This is a penny business," says Wes Merhige, the general manager of the Santa Clara, Calif., Marriott, "and Bill knows how to keep track of the pennies."

Before his two-hour tour ended, Mr. Marriott peeked in on the front desk, the laundry ("good, no wrinkles"), the loading dock, the exercise spa, storage lockers ("what's hidden in here?") and about half a dozen rooms and suites. At the employee cafeteria, he swept through the room, shaking hands with at least 50 startled workers.

In fact, Mr. Marriott is so involved in every detail of his business that he selects the color of the carpeting for hotel lobbies. Some managers argue that this style can usurp decision-making from lower levels and cause resentment. But Marriott Hotels occupancy rate is 10% above the industry average, and Mr. Marriott believes his involvement has given the company an advantage. "The edge in this business is people," he says. "I'm trying to communicate that I care and that the role they play in the organization is an extremely vital one."

While Mr. Marriott queries employees, Mr. Baute, the plain-spoken 57-year-old chief executive of Markem Corp., calls on customers, especially those with complaints. "I don't like to make honey-and-roses calls," he says. "I like to go where I can make a difference." Besides, he adds, "if you only want to hear the good news, you miss most of what's happening."

During a recent trip to the Far East, Mr. Baute visited a customer in Tokyo who was having difficulty using one of Markem's printing machines. After a quick call to a company engineer, Mr. Baute was able to show the customer how to adjust the machine.

Sometimes a customer's complaints aren't justified. "I've had people tell me that we didn't send them what they wanted only to find out later that they didn't order correctly," he says, noting that "you have to be careful to check out the information you collect."

Nevertheless, Mr. Baute, who spends 25% of his time visiting customers, believes his emphasis on service has helped Markem enlarge its market and win back a few disgruntled buyers since he took over as chief executive four years ago. Revenue at the closely held company last year approached $100 million.

Customer Complaints

At Markem's Keene, N.H., headquarters, Mr. Baute answers his own office phone. He also insists that the company's 1,200 managers and workers listen to tapes of customers from more than a dozen industries, describing their diverse needs. "It's not Joe the chairman talking, it's the person paying the bills," he says. "There's a lot more credibility when employees hear complaints directly from the customer."

Not all direct contact yields reliable information. As chief executive of Frito-Lay Inc., Michael H. Jordan used to marvel at the quality of the potato chips he sampled at the company's Dallas plant. Then he discovered that plant supervisors hand-picked potatoes in preparation for his visits and made sure he sampled only perfectly shaped chips. From then on, Mr. Jordan sampled potato chips that he purchased off supermarket shelves.

In another attempt to get the facts, Mr. Jordan, who is now the executive vice president of parent PepsiCo Inc., installed a computer terminal at his desk to monitor business. The computer provided him with data on everything from inventories and sales to marketing. "I wanted some raw facts that hadn't been scrubbed by layers of management," he explains.

To uncover the truth, executives also have to overcome human obstacles. Workers may feel intimidated and awkward talking openly to the top boss. "When I first started visiting plants, managers were apprehensive," says Markem's Mr. Baute. "They thought workers might ask embarrassing questions, like why didn't they get raises." But as it turned out, "employees were afraid. We had to work like the dickens to convince them there would be no retribution" if they spoke honestly.

Quentin C. McKenna, the chief executive of Kennametal Inc., a Latrobe, Pa., cutting-tool maker, always travels alone when visiting one of the company's 43 manufacturing and sales sites. It's an approach he adopted three years ago in an effort to raise employee productivity and involvement. His visits are announced—a surprise call once caused "panic" among workers, he says. But by traveling without an entourage of public-relations staff and other corporate lieutenants, he believes he can communicate more easily.

One of his techniques: randomly inviting half a dozen employees to lunch or dinner when he visits their plant. Some employees think the invitation is a prank, and a few even decline. But those who do accept usually provide Mr. McKenna with valuable information. He learned of a union organizing drive at one plant, and at another he discovered that an expensive piece of new equipment wasn't operating.

Rapid Growth

Maintaining contact with employees requires an enormous commitment, executives at many high-growth companies have discovered. At People Express Airlines, for example, Donald C. Burr, the chief executive and founder, acknowledges that "people can get lost quickly when you have very rapid growth." In just four years, the airline, now the nation's 12th-largest carrier, has expanded to 4,000 employees from 250.

Mr. Burr, who requires all employees to do a variety of jobs, used to share tasks, too, from taking reservations to checking baggage. "We'd all put in 12-hour days and share pizza at the end," recalls Gail Taylor-Kay, a customer-service manager at People's Pittsburgh terminal and one of its first employees. Today, she says, there are newer employees who wouldn't know top executives if they saw them.

Mr. Burr still lectures at orientation sessions for new employees, and, to create more of a community feeling, he is reorganizing the company into smaller operating units. But, he laments, "I can't afford to spend all my time traveling around the system. I have to rely on other people's eyes and ears."

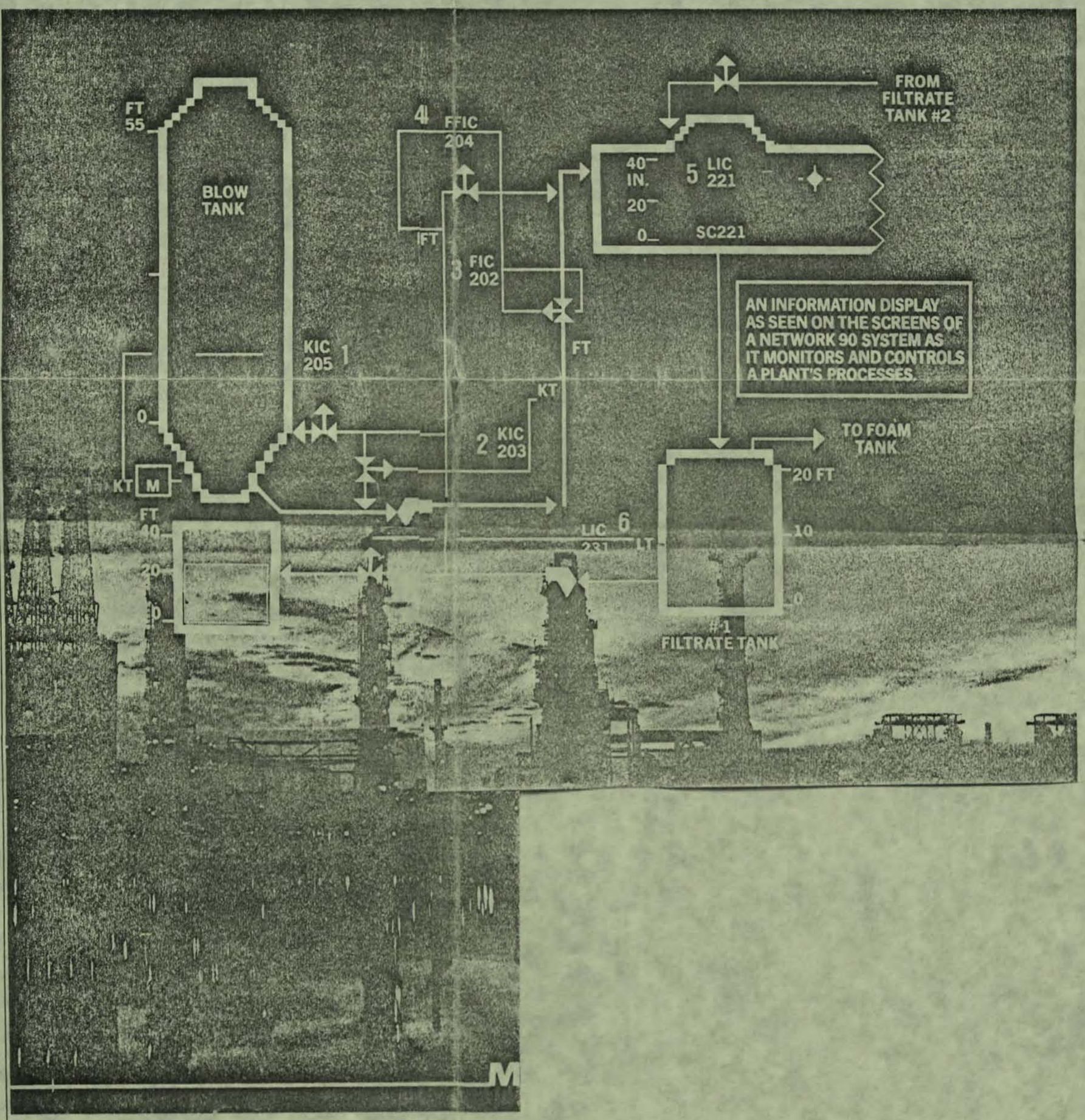
Checks Facts

Other companies, such as Tandem Computers, use technology to link the chief executive with employees. Every morning Mr. Treybig of Tandem switches on his computer terminal and reads at least two dozen new messages from virtually every department and rank in the company. One recent message came from an employee in Austin, Texas, who complained that co-workers who had worked for his supervisor at another company were being favored for promotions. When Mr. Treybig checked out the complaint, he found that it was false—and wrote the employee directly to quell his concerns.

Another communications technique is the "beer busts" Tandem holds every Friday afternoon at each of the computer maker's 132 offices world-wide. The intention, says Mr. Treybig, who founded the company in 1974, is to create an informal environment where employees, including himself, can exchange ideas. "People feel intimidated to walk into your office," he says. But over beer and popcorn, "employees are more willing to talk openly."

Mr. Treybig believes that the "beer busts" and electronic mail have helped give Tandem a turnover rate that is half that of competing high-technology companies in Silicon Valley; three-quarters of the 32 original employees are still with Tandem today.

One employee, recalling how he has seen a sweating Mr. Treybig in shorts walking through the company lobby after his daily jog, says, "It makes me comfortable to know that the president is one of the guys. This is a human company."



LEVEL 1 - 2 OF 3 STORIES

February, 1985

SECTION: KERNEL; Byte West Coast; Pg. 371

LENGTH: 2767 words

HEADLINE: What Next?

BYLINE: BY JOHN MARKOFF, PHILLIP ROBINSON, AND EZRA SHAPIRO

HIGHLIGHT:
Thunderscan, the ins and outs of the windowing game, new workstations, and more

BODY:
Apple Computer's president, John Sculley, has a habit of publicly referring to Macintosh graphics as "super graphics." However, although the Mac may be impressive when compared to the Apple II and the IBM PC, we've always been a little irritated by the super-graphics claim. Shouldn't the superlatives be reserved for the new generation of personal computers with 1024-by 1024-pixel (picture element) bit-mapped screens and hardware coprocessing support for animation and other sophisticated graphics operations? By those standards, the Mac seems primitive indeed.

Yet, over the course of the past few months, as new applications have been introduced, the Macintosh has proven to be consistently surprising in the quality of its graphics. Despite its relatively low number of pixels, the Macintosh display is crisp, partly because of its small screen size.

THUNDERSCAN

Recently, a demonstration given to us by Macintosh designer Andy Hertzfeld and Tom Petrie of Thunderware provided convincing evidence that if Macintosh graphics aren't "super", they're at least a clear step above anything else currently available in that price range.

Thunderware, previously known as a manufacturer of clocks for the Apple II and III, drew a lot of attention when its new Macintosh product, Thunderscan, was introduced at this year's National Computer Conference. Thunderscan is a high-resolution digitizer that enables the Macintosh to capture and later reprocess virtually any image that can be rolled under the platen of the Apple Imagewriter dot-matrix printer. The process is deceptively simple. Thunderscan consists of a palm-size optical sensor that snaps into the Imagewriter in place of the ribbon cartridge. When a document or picture is rolled through the printer, software written by Hertzfeld controls the sensor as it slides back and forth over an image.

Petrie says that Thunderware is sensitive about discussing the exact nature of the scanning technology used in the device. However, he will say that the scanner is able to extract analog information from the image and transmit it to one of the Macintosh serial ports without having to use traditional A/D (analog-to-digital) conversion techniques.

It's an intriguing process. For example, it's possible to increase the resolution of the image being scanned by increasing the scanning rate. The result of the proprietary technology is a low-cost scanning device (initially $229) that permits the Macintosh to store and manipulate images with a resolution in excess of 200 dots per inch.

According to Petrie, there are a number of difficulties in getting graphics images into the Macintosh. The greatest problem is that high-resolution graphic images require a relatively large bit map. Until now, the only way of stuffing this information into the Mac has been to use a video camera, and video cameras are relatively high cost and low resolution. (At the same time, it should be noted that cameras have the advantage of being fast. Because essentially only one row of pixels is scanned at a time, it takes Thunderscan as long as 15 minutes to digitize an entire 8 1/2- by 11-inch document.)

Once Thunderscan has transmitted an image to the Macintosh, software designed by programmer Hertzfeld (who has left Apple and is now working on his own) can do a remarkable job of enhancing or manipulating it. Not only can you rescale images, you can also alter brightness and contrast to create halftones or high-contrast images (see figure 1). Additionally, the Thunderscan software contains a number of graphics tools familiar to those who have used the MacPaint program on the Mac. There is also a special "express" option that lets you go directly to MacPaint to further enhance an image.

The Thunderscan software operates on a bit map that is stored in the Macintosh RAM (random-access read/write memory). The bit map has a size limit of 48K bytes on the 128K-byte machine. This is just about a full page at 72 dots per inch. On the 512K-byte Macintosh, a bit map as large as 300K bytes can be stored. With this amount of information you can store a full 8 1/2-by 11-inch document at up to a 300 percent magnification. You can use this expanded storage space for image enlargement or to extract gray-scale information on up to 64 levels of intensity. On the 128K-byte Macintosh, both the magnification and the halftoning features are available, but only for smaller regions of a scanned document (a document can be scaled four times linearly, yielding a magnification of up to 16 times by area).

To use the equipment, first select a page-map option from the scanner's menu. From within the page-map screen you can choose to scan the area of your original by changing the size of a selection rectangle. The system prompts you with warning messages if the area you select is either too large to store gray-scale information or too large to scan. This feature also lets you scan just a portion of a larger document to make certain that you have gray scale and magnification set correctly.

After you've completed the scanning phase, you can play with the image in memory. You can work with a document in the same way you use MacPaint, with a special image window. But Hertzfeld has added a series of features to the Thunderscan software that give it functions that MacPaint doesn't have. You can use a special hand icon to move large documents around in the image window (unlike the first release of MacPaint, which stored image information outside of memory on disk, Thunderscan allows the document to slide freely).

You also can use the hand icon to impart inertia. For example, if you push the mouse in one direction, the image will continue to slide after you have stopped, much like a piece of paper slides along a table. In addition to

being intuitive, this feature lets you move slowly or quickly around an image.

Other MacPaint icon tools, such as the pencil, FatBits, and cutting and pasting, as well as inversion (changing black pixels to white pixels and vice versa), are also available within Thunderscan.

Documents created by Thunderscan can be saved in one of two formats. One is a special MacPaint format yielding a 720- by 756-pixel document with 1 bit of information per pixel. The second is a less-restricted scan format that permits multiple bits of information to be stored for each pixel.

The range of possibilities that Thunderscan creates is fascinating. For example, Hertzfeld thinks that it might put an end to the burgeoning market for Macintosh prerawn images because you can copy virtually any image into the Macintosh memory.

A future project for Hertzfeld is a Macintosh desk accessory (a small program that runs in the background under the Mac operating system) that will permit Thunderscan to send scanning information out through the Macintosh modem port while you work in another program. This would convert the Macintosh into a low-cost (and multitasking) digital-facsimile machine. Hertzfeld is also working on a protocol that would enable the Macintosh to print software code in a format that could be scanned using Thunderscan. Paper would then be the medium for software distribution. Hertzfeld believes that he could get close to 40K bytes per sheet of paper.

MORE DELAYS FOR MICROSOFT WINDOWS

In early October 1984, Microsoft Corporation announced that it was postponing the introduction of its longawaited Windows software-integration package until June 1985. Leo Nikora, Windows product-marketing manager at Microsoft, said that the company was undertaking "a major redesign," in part because Windows' code currently takes up too much space and also because several functions are not running fast enough.

As recently as this spring, Microsoft was hoping to achieve a minimum recommended system size of 192K bytes. The most current technical information available on Windows states that Windows together with the operating system occupies 156K bytes of memory; thus the currently recommended 256K bytes leaves only about 100K bytes for applications software -- not much by today's standards.

Nikora said that almost all of Windows is now written in the C language and that Microsoft plans to rewrite as much as half of the program in 8088 assembly language. Apparently Microsoft is happy with the windowmanagement functions of the program but feels that text management is inadequate. Nikora said that Microsoft expects a twofold increase in text performance after the code is rewritten, although he feels that the performance of the product is already satisfactory on the IBM PC AT.

Microsoft is clearly worried that its decision to delay Windows will lead to a negative attitude in the marketplace. "We have to be careful that Microsoft doesn't get the reputation of giving up in the face of Topview," claims Nikora, referring to IBM's entry in the window-management fray.

He also maintains that Microsoft's decision to delay the product introduction hasn't led to mass desertions on the part of companies developing applications software for Windows. On the contrary, he said that there was a general feeling of relief that they were being given more time to get their applications ready for market.

Microsoft is also looking for a way to differentiate Windows from TopView, and the company appears to have found one because the current version of TopView is designed for a character-based display. This will, at least temporarily, be a selling point for Windows, which functions only in a bit-mapped environment.

Will Windows face the same fate that befell Visi On? Nikora says that he is certain that it won't -- his evidence is the fact that a number of the manufacturers of IBM PC-compatible computers appear to have a sizable stake in the success of Windows. Still, Microsoft is starting over again after investing more than a year in attempting to develop a user interface for the IBM PC.

CONVERGENT'S FAST NGEN

Although criticism of the IBM PC AT hasn't been nearly as fevered as that leveled at the PCjr, there are some doubters emerging. Why, some experts have asked, does the 80286 microprocessor in the PC AT have an artifically lowered clock speed? And why is the bus speed even slower than the bus speed for the IBM PC? A number of companies are already comparing their systems to the PC AT to demonstrate their systems' performance.

Convergent Technologies Inc., a Santa Clara, California, company is selling its NGEN "modular" workstation based on the Intel 80186 microprocessor to a variety of OEM suppliers. Last year the NGEN got off to a slow start because of the scarcity of the 80186, but now Convergent claims to have shipped 50,000 systems.

The NGEN is built around a collection of components; a separate video display and keyboard connect to a shoebox-size central processor. A variety of add-ons such as RAM, floppy- and fixed-disk drives, and graphics components can be simply plugged into the processor module to expand the system. Convergent Technologies' own multitasking multiprogrammed operating system (CTOS) permits users to run MS-DOS, CP/M-86, and Convergent's own flavor of UNIx System V called Distrix.

It's a quick machine; the 80186 runs at 8 MHz, and it comes equipped with 120-nanosecond RAM. The NGEN has a proprietary "x-Bus" that allows 16-bit DMA (direct memory access) transfers at speeds up to 4 megabytes per second.

To show off the performance of the NGEN, Convergent sets it next to an IBM PC AT and then has both systems recalculate a series of Fibonacci numbers in 2400 cells of a Multiplan spreadsheet. It takes the NGEN 4.9 seconds to recalculate the series while the PC AT finishes it in 11.8 seconds. This performance comparison may not be entirely fair, given that Multiplan on the NGEN has been ported to run under CTOS and in the process its performance has been considerably improved. However, the demonstration gives ample evidence that it won't be hard to improve on the performance of the PC AT.

EXPLOSIVE COMPATIBLES

Tandem Computers Inc. has a new workstation and some associated software aimed at the IBM PC crowd. Tandem is known for its NonStop systems, such as the new TxP 32-bit, transaction-processing computer. Parallel processors and special software protects these systems from breakdowns, which endears Tandem computers to on-line users such as airlines and banks.

The new Dynamite 654x family of workstations provides the same features as the 653x family of on-line terminals but adds both 3270 emulation and personal computer features. The Dynamite is built around the 8086 and can, it is claimed, run most IBM PC software.

The two Dynamite workstations (which will be built in Austin, Texas) differ in mass-storage capacity and price. The 6541 has two 360K-byte floppy-disk drives and costs $2995. The 6546 has one 360K-byte floppydisk drive and a 10-megabyte harodisk drive and will cost $3995.

Both the 6541 and the 6546 have 12-inch green screens (for both text and graphics) and 256K bytes of RAM. The current options include bitmapped graphics and memory expansion to 640K bytes of RAM. The Dynamite terminals interface directly with Tandem's 5540 and 5541 printers.

Dynamite terminals come with MS-DOS and GW-BASIC. The new Tandem software includes IXF and PCformat. IXF (and associated information exchange facilities) can transfer data from files on a Tandem NonStop system to a Dynamite workstation. PCformat converts such files into MS-DOS-compatible files.

Is Dynamite just another "compatible"? Tandem says it isn't because, while the Dynamite can run most IBM PC software, it isn't supposed to be an IBM PC competitor; it's designed specifically to work with Tandem's bigger transaction machines.

REMEMBER BUBBLES?

Intel's Non-Volatile Memory Division -- one of the few companies still in the bubble-memory game -- has a couple of new removable bubble-memory cassette kits: the BCK-10 and the BCK-12. Both provide a 1-megabit cassette. The BCK-12 prototype kit costs $495 and has a limited temperature range (10 to 55 degrees Celsius). The BCK-10 production kit costs $605 and can survive a greater range of temperatures (0 to 65 degrees Celsius). The kits include the necessary support chips for the bubble memories and an SBC-258 board interface with a ribbon-cable output so you can just hook the kit up and start writing software. Intel is proud of the simplicity of these kits; they use only six support chips where earlier bubble systems required many more.

The Intel facility in Folsom, California, is getting a new fabrication line to make 4-megabit bubble chips; the standard 1-megabit chips will now probably be phased out in 1985 or 1986. Moving from 4 to 16 megabits on a chip (by shrinking the loops) will be difficult and should take several years -- the 4-megabit chips already depend on the advanced, expensive technique of X-ray lithography.

Bubble memories aren't found in many personal computers; the expense just can't be justified for routine applications. Some portables -- the Grid and the Sharp -- do use bubbles, which allow mass-storage with low power use. A few add-on boards have appeared (such as the Helix board for the IBM PC) that

exploit the nonvolatility of the bubble chips. While both the Grid and the Helix products use Intel bubbles, the Sharp portable uses Japanese bubble chips. If fabrication costs can be brought down to a reasonable level, bubbles could be the storage device of the future, though early hopes have long since faded.

A BLUE NOTE

Rolm -- the telecommunications equipment maker -- has frequently been used as an example of the Silicon Valley workstyle because it offers such employee benefits as flextime, sabbaticals, and a multimillion-dollar recreation center. Two senior IBM officials appeared at Rolm to quell speculation that the famous workstyle would be threatened by the IBM buyout. Said one of the officials, "Contrary to what the press has said, we're not here to drain the pool."

COMPANIES MENTIONED

CONVERGENT TECHNOLOGIES INC.
2500 Augustine Dr.
Santa Clara, CA 95051
(408) 727-8830

INTEL CORPORATION
151 Blue Ravine Rd.
Folsom, CA 95630
(916) 351-8080

MICROSOFT CORPORATION
10700 Northup Way
Bellevue, WA 98004
(206) 828-8080

TANDEM COMPUTERS INC.
19333 Vallco Parkway
Cupertino, CA 95014
(800) 482-6336

THUNDERWARE
19 Orinda Way, Suite G
Orinda, CA 94563
(415) 254-6581

GRAPHIC: Figure 1, A scan dump. As Thunderscan scans a document, the image appears on the screen display. It can be adjusted dynamically by resetting the contrast and brightness gauges on the display. As each line is scanned, a scattergram of the scan appears on the Light Intensity Gauge. In the lower left corner a message reports on the progress of the scanner. After the bit map of the image has been transferred to the Macintosh RAM it can be edited with several MacPaint-style tools that are displayed as icons in the upper left corner of the screen. The image also can be displayed in a larger window accessible from the menu bar.

LEVEL 1 - 3 OF 3 STORIES

February, 1985

SECTION: NEW PUBLICATIONS; Pg. 80

LENGTH: 30 words

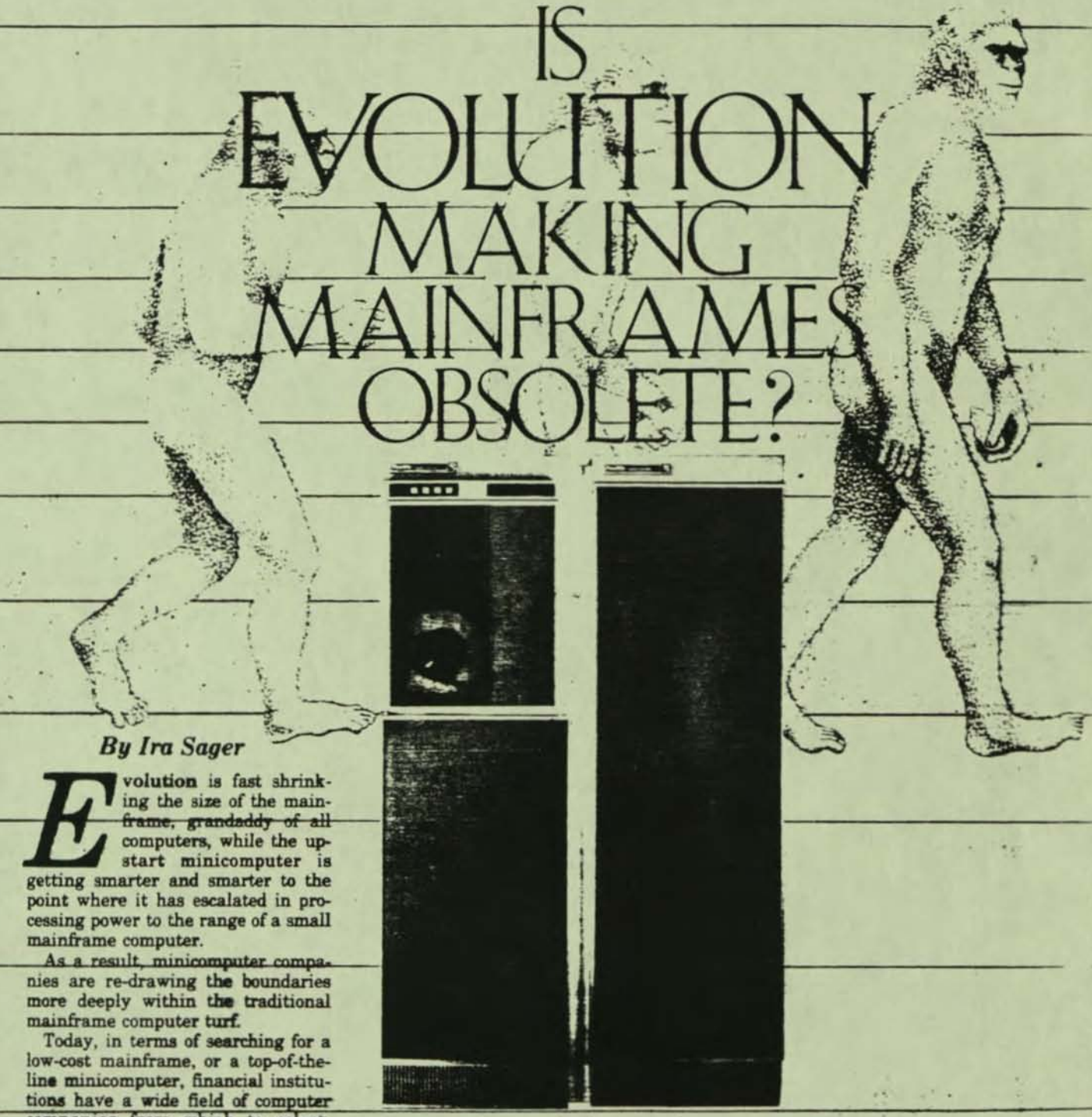
HEADLINE: Emergency shutdown

BODY:
Pretect II is a fault-tolerant supervised emergency shutdown system that can distinguish between a wiring fault and a true emergency. TripA-Larm offers a brochure on the unit.

GRAPHIC: Picture, no caption.

Tandem & competition

IS EVOLUTION MAKING MAINFRAMES OBSOLETE?



By Ira Sager

Evolution is fast shrinking the size of the mainframe, grandaddy of all computers, while the upstart minicomputer is getting smarter and smarter to the point where it has escalated in processing power to the range of a small mainframe computer.

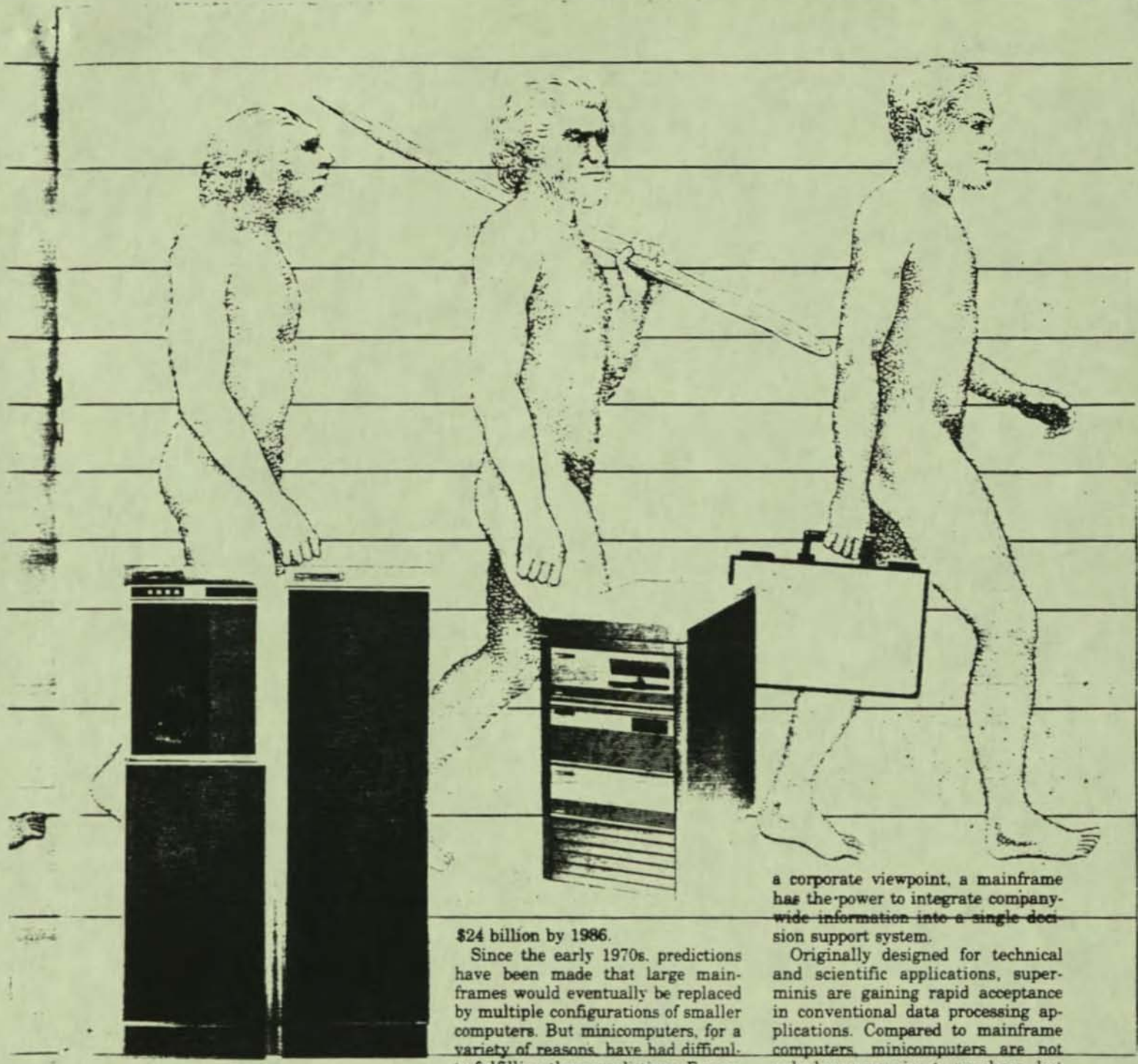
As a result, minicomputer companies are re-drawing the boundaries more deeply within the traditional mainframe computer turf.

Today, in terms of searching for a low-cost mainframe, or a top-of-the-line minicomputer, financial institutions have a wide field of computer companies from which to select. Where once the only choice for back office or quote services was a mainframe costing several millions of dollars, both mainframe and minicomputer companies have begun offering competitive solutions priced anywhere from $100,000 up to over $1 million. This has created a sizable overlap in both the performance and price between minicomputers, or the top drawer superminis, and some mainframe computers.

"The distinctions between minicomputers and mainframes have been blurred," declares Craig Schumate, founder and president of the Morris Group for Information Technology, in Mendham, N.J.

Pricing is a fluctuating measure of what constitutes a mainframe or a minicomputer because the changes in technology have permitted the performance of computers to climb, as respective costs have declined. In general, mainframe computers are priced beginning around $100,000, and process information in word lengths above 32 characters, accelerating machine performance. Superminis, on the other hand, can start at $50,000 and process information in 16- or 32-character word lengths.

The term mainframe actually re-



fers to the cabinet that houses the central processing unit and main memory. (Sometimes, with very large memories, a separate cabinet is used.) Since it was originally the largest component in size and cost, it was called the mainframe.

Running neck and neck with personal computers, the general purpose mainframe represents one of the largest dollar values of systems installed worldwide today. The value of installed mainframes is projected to reach $145 billion by 1986, according to Datapro Research Corp., a computer market research firm in Delvan, N.J. Superminicomputers are projected to have an installed base value of $24 billion by 1986.

Since the early 1970s, predictions have been made that large mainframes would eventually be replaced by multiple configurations of smaller computers. But minicomputers, for a variety of reasons, have had difficulty fulfilling those predictions. For example, most minicomputers are significantly limited as to the amount of on-line storage that can be attached. The largest minicomputer can support only a few billion characters as compared to a mainframe such as IBM's 3081, which can handle from 60 billion to 80 billion characters of on-line storage.

Mainframes will obviously be around for a while because of the large investment made to date in software to run these systems, the expensive investment in the hiring and training of skilled computer personnel, and the time expended to plan and install the complex systems currently existing. In addition, from a corporate viewpoint, a mainframe has the power to integrate company-wide information into a single decision support system.

Originally designed for technical and scientific applications, superminis are gaining rapid acceptance in conventional data processing applications. Compared to mainframe computers, minicomputers are not only less expensive to purchase, but generally do not require the vast computer staffs that are required with larger systems.

Schumate, of the Morris Group, claims mainframe computer software is so complicated, specialists are sometimes required. With a minicomputer, he adds, a customer may give up some of the features found in a mainframe, but the system is much easier to operate. Mainframes, he points out, must also be environmentally controlled and kept cool.

"Mainframes require a lot more in-house support than minicomputers," says Leslie Newman, a consultant with Innovative System Techniques in Brookline, Mass., specialists in de-

EVOLUTION

signing computer solutions for investment firms and brokerage houses. If selecting a minicomputer, suggests Newman, "it has to offer a growth path to a larger minicomputer."

Computer consultant Jeff Pulver, president of Intercomp Design, Inc., in Neshanic Station, N.J., offers these words on selecting a computer with enough room to keep pace with business growth: "There's a law that states 'No matter how much computer power you have, you'll use it up.' What people don't look at (when outgrowing a system) is the cost of getting a larger computer."

David Freid, Wall Street district manager for Tandem Computers, suggests asking, "What is the transaction load today and what do the next five years look like?"

Minicomputer companies are redrawing the boundaries more deeply within the traditional mainframe turf.

The number of transactions performed each day and the number of accounts handled by the firm provides the basis for many brokerage firms to decide when a large mainframe is required.

"It depends on the type of business and the amount of business," maintains Donald E. Brown, senior vice president and director of MIS operations for Boettcher & Co., in Denver, Colo. "Generally, when you are taking around 10,000 trades a day with over 100,000 active customers, you have to start looking at a mainframe."

Boettcher, says Brown, does 2,000 to 3,000 trades a day with 50,000 to 60,000 customer accounts. The firm uses three Hewlett-Packard minicomputers and two IBM Series/1 minicomputers as front end processors.

Brown says he likes the database capability of the HP computers, but its drawback is its inability to share disk drives between the three computers. He said Boettcher made the decision to go with HP primarily on a cost basis. "The decision was made on cost. HP cost $1 million versus $4 million for an IBM mainframe."

Both computer suppliers and data processing heads stress there are a number of factors to consider when deciding whether to go with a minicomputer or a mainframe. High on the list is software. "I start with the software," notes Newman. "The hardware really is secondary. It's very important to define the functions people need."

"It's like selecting real estate— the three most important considerations are location, location, and location," muses Shumate. "The three most important factors for selecting a computer system are software, software and software."

"The distinctions between minicomputers and mainframes have been blurred."

Another factor often cited by consultants and data processing people is the expandability of the system. "We are looking for a system that can grow and expand," asserts Thomas Gegenheimer, who heads data processing for Bateman, Eichler, Hill Richards, Inc., in Los Angeles.

Migration strategy, as computer companies refer to expandability, has become an important marketing tool. Last Fall, three top computer companies beefed up their migration strategies, illustrating how mainframe and minicomputer companies are addressing this segment of the market.

Burroughs extended the lower end of the spectrum on its mainframe line lower with a new computer dubbed the A3 and designed to provide an easy migration path to its larger mainframes. Burroughs says the A3 function is three-fold: it operates as a general purpose data processing system for medium-sized companies, is used as part of a distributed data processing network, and serves as an upward migration product to other mainframes.

Burroughs also attempted to simplify some of the software associated with its mainframe computer by introducing a new group of programs called Interpro, short for Interactive Productivity. The six programs provide extensive multi-level menus to allow programmers and operators to handle tasks normally requiring complex languages much more easily. The packages offer reduced application programming, simplified installation and maintenance of sys-

MAINFRAMES FOR BUDGETS UNDER $1 MILLION

Here's a list of some of the top computer companies offering mainframe systems for $1 million or less. Prices vary with the configuration of the computer.

Auragen Systems, 2 Executive Dr., Ft. Lee, NJ 07024, (201) 461-3400. The Auragen 4000 is based on a loosely clustered network. Starting at $138,000, up to 32 clusters can be connected.

Burroughs Corp., Burroughs Place, Detroit, MI 48232, (313) 972-7000. The new A3 line offers memory from 3 MB to 48 MB and ranges in price from $136,000 to $1.07 million.

Digital Equipment Corp., 146 Main St., Maynard, MA 01754, (617) 897-5111. The new VAX 8600 ranges in price from $576,000 up to $970,000, with memory expandable from 12 MB to 32 MB.

Honeywell Information Systems, Honeywell Plaza, Minneapolis, MN 55408, (812) 871-6000. The DPS 8 series supports 4 MB to 64 MB of main memory. System prices range from $149,350 up to $980,000.

IBM Corp., Corporate Headquarters, Old Orchard Rd., Armonk, NY 10504, (914) 765-1900. The 308X line, including the new long-end machine, runs from 8 MB up to 64 MB with a price span of $830,000 up to $3.69 million. The new 4381-3 starts at $825,000.

NCR Corp., 1700 S. Patterson Blvd., Dayton, OH 45479, (513) 445-5000. NCR's 8500 line features 4 MB to 16 MB with prices ranging from $170,000.

Sequoia Systems, Inc., Boston Park W., Marlborough, MA 01752, (617) 480-0800. Sequoia's system starts with a base configuration of 4 MB of memory and lists for $290,000.

Sperry Corp., Jolly Rd., Blue Bell, PA 19422, (215) 542-4011. Sperry's 1100 mainframes run from 2 MB up to 32 MB and vary in price from [illegible].

Stratus Computer, Inc., [illegible], Natick, MA 01760, (617) 653-1400. Stratus computers range from the low-end XA 2000, starting at $101,000 for a 2 MB system, to the XA 600 for an 8 MB system starting at $270,000.

Tandem Computers, Inc., 19333 Vallco Pkwy., Cupertino, CA 95014, (408) 725-6000, New York City, (212) 559-6000. Tandem recently cut prices on its systems with the Nonstop I starting at $92,000 for a system with 2 MB in the new TXP which starts at $206,725 for an 8 MB system.

tems software, as well as reduced training requirements.

An entry level model in the new A3 line starts at $136,000 for three MB memory, eight data communications lines and 500 MB storage. A top-end A3 is priced at $450,000 and offers 12 MB memory, 24 data communications lines and 1.5 GB memory storage.

"The A3 represents the second major step in the evolution of our A series strategy," says Fred R. Meier, vice president of program management for Burroughs systems products. "The A3 upholds Burroughs' commitment to design systems that improve productivity, are easy to use, and are compatible within their own family."

Within the A3, Burroughs mainframes, users can move up to the top of the line mainframe and get 26 times as much computer power (over the A3) without reprogramming the system.

"Mainframes are number crunchers and don't process transactions very well. There's no middle ground."

Mini Milestones

As Burroughs pushes its mainframe architecture down, it bumps right into Digital Equipment Corp. (DEC) and other traditional minicomputer companies.

DEC has pushed its VAX computer architecture up into the mainframe computer performance range with a new system called the VAX 8600. The new VAX computer is priced from $576,000 to $970,000, ranging in memory and disk storage from 12 MB and 456 MB up to 32 MB of memory and 4.5 GB of disk storage.

"We've reached another major milestone in fulfilling our strategy," says Bruce Ryan, manager of DEC's VAX marketing group. That is the VAX 8600 dramatically expands the power and capability of VAX cluster systems."

DEC's VAX cluster is a method for tying up to 16 of its VAX computers together to rival the performance of the most powerful mainframe computers. The company claims that a VAX cluster of its new 8600 systems provides 30 times the performance of the VAX 11/780 and equals the power of IBM's largest mainframe, the 3084, at about half the cost.

IBM recently fielded two new computers, bracketing the new DEC machine between its medium- and large-scale computer families.

With the introduction of the new 4381-3, priced to start at $825,000, IBM placed a computer at the top end of its 4300 line to compete against DEC. The new 3083 puts another DEC rival at the bottom end of its 308X family which can be expanded 10-fold to the high end 3084 mainframe.

The introduction of new computers in the low-end of the mainframe arena by IBM, Burroughs, and DEC is surely going to escalate the fierce competition against firms like Tandem, Data General and Prime.

The lower prices of mainframe computers and the growing power of minicomputers is enabling some smaller brokerage houses to become more competitive by moving from time-sharing services to an in-house computer.

Stephens, Inc., a securities firm in Little Rock, Ark., is in the process of installing a Tandem system. Rick Alexander, who heads data processing, says recent price cuts by Tandem and the rising cost of service bureaus made it economically feasible to buy a Tandem computer. The system, with software and all, will come to about $1.5 million.

Alexander says the Tandem system will allow Stephens to be more competitive. An in-house computer operation, he adds, will improve the response time over the service bureau. More importantly, "we will get control of our data," he says.

Look for Expandability

Alexander suggests if a firm currently uses a service bureau for its data processing needs, they should consider moving to an in-house computer system when they reach the point where they are handling 500 trades a day.

Stephens brought Alexander in last fall to coordinate and install the Tandem system. He says that after deciding on a software package from Securities Industry Software, a software house specializing in the brokerage industry, he looked for a "flexible" system. Alexander says his flexible Tandem system will grow in a matter of months from a mix of 75 terminals and printers up to 120 machines supported by the computer. The data processing staff will be kept to a minimum and Stephens will sign a contract with Securities Industry Software to provide maintenance on the system. Comparing cost advantages, he points out that "IBM costs signficantly more in operation and education of operators compared to Tandem."

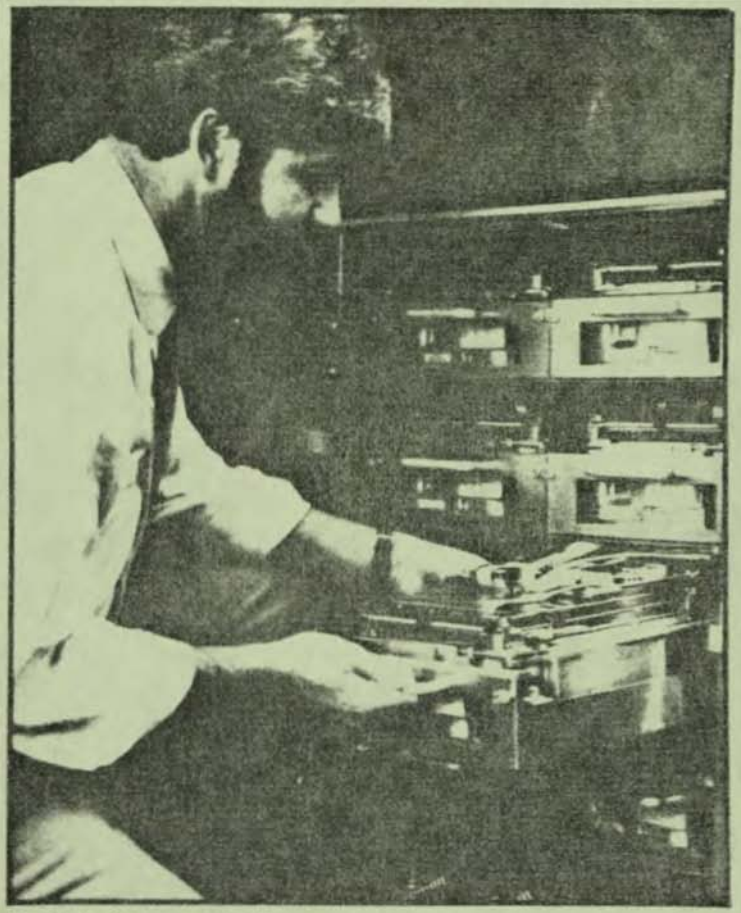
Gegenheimer of Bateman Eichler, Hill Richards, Inc., says that outside of software, the firm is most concerned with system reliability. "That's why I'm looking for a fault tolerant type of system," he says. The firm has considered computers from IBM, Wang, Tandem and Sperry, but is currently testing a system from Stratus.

Stephens' Tandem system is renowned for its fault-tolerant capabilities. However, according to Alexander, it was purchased for its transaction processing orientation. Most mainframes are batch processors, which, as the name implies, process information in batches. Transaction oriented machines, which include most of the fault tolerant systems on the market today, process the transaction when it happens instead of waiting till several transactions occur. "Mainframes are number crunchers and don't process transactions very well. There's no middle ground," Alexander says.

Consultants say there is no single application that mandates the use of a mainframe over a mini.

One of the benefits of an in-house system for Stephens will be the ability to maintain an historical database to use for reports. Alexander says the service bureau his firm uses only stores information for 45 days. With the Tandem system he is planning to keep on tape a library of information dating six months to a year.

In general, consultants say there is no single application that mandates the use of a mainframe over a minicomputer. Rather, a number of factors such as the transaction load, the number of users supported by the computer, and the storage requirements should point out the right system.



Tandem's disc storage facility.

Tandem speeds data access

A NEW high-performance disc storage product has been announced by Tandem Computers Incorporated. It stores up to 1.3 gigabytes (1.3 billion bytes) and speeds access to data through the use of a unique new packaging design.

Designated the V8 disc storage facility, the product packages up to eight high-speed 168-megabyte Winchester drives in a single compact cabinet. The multiple drives speed access to data by allowing up to eight simultaneous disc accesses with an average seek time of only 20 milliseconds each.

Jerry Peterson, vice president of product management and international marketing and sales, stated: "We designed the V8 for our customers who have very large databases and are processing high volumes of transactions. The V8 will increase throughout in these applications by allowing fast, frequent access to large amounts of data with a high degree of parallelism."

With eight disc drives packaged in six square feet of floor space, the V8 is, says Tandem, the most economical user of computer room space in the industry.

The V8 features a modular design that allows easy on-line service. Disc drive modules are slide-out units that can be individually installed or removed from the cabinet without disturbing any cables or interrupting other drives in the same cabinet.

The V8's design enhances reliability and data availability through the use of sealed Winchester technology drives, a dedicated power supply for each drive, and two cabinet power cords. Each cord supplies power to up to four drives, allowing data to be mirrored on discs housed in the same cabinet.

The V8 disc storage facility is available for immediate delivery. The minimum V8 configuration includes the cabinet and four drives, each with a storage capacity of 168 megabytes unformatted (128 megabytes formatted).

Tandem Computers Inc (CW), 19333 Vallco Parkway, Cupertino, California 95014. Tel: (408) 725-6000.

Sorter solves microfilm

part of the corporate policy in their organizations.

According to the DPMA survey, 91 percent of respondents said that ergonomics is important and deserves more corporate recognition—84 percent had responded that their corporation's policy had no ergonomic guidelines.

Ergonomics is defined by the DPMA as the science of adapting work, environment and equipment to suit the everyday needs of end-users.

minals. These terminals feature removable keyboards, adjustable character size and color, and nonglare screens.

Other suggestions for ergonomic solutions include adjustable workstations, comfortable seating, proper lighting and frequent rest periods. Some DP managers also suggest more end-user education and training and constant feedback to obtain direct imput on ergonomic concerns.

Xerox Names Dempsey VP

LOS ANGELES—Donald Dempsey has been appointed to the position of vice president, marketing and sales, for Xerox Corp.'s original equipment manufacturing (OEM) printing products and Diablo products lines.

Operating as a part of the Xerox Systems Group headquartered in El Segundo, Calif., the OEM lines under Dempsey include electronic printing products and color ink-jet, thermal-transfer, dot-matrix, and daisywheel printing products.

Dempsey's new title reflects the addition of the Diablo product line to his realm of responsibility.

An employee of Xerox since 1968, Dempsey has held various positions with the firm, including national sales manager for the printing systems division end user group.

Prior to joining Xerox, Dempsey was a product manager and sales manager for IBM in Los Angeles.

Dempsey received his master's degree in mathematics from the University of Detroit.

—Chuck Hester

VPs Named By Tandem

CUPERTINO, Calif.—Tandem Computers Inc. has announced two new appointments—the election of Thomas Lyman Chun to the new position of vice president of corporate projects and the naming of Thomas J. Klitgaard as vice president, general counsel and corporate secretary.

Chun has been with Tandem since 1980. He has served as director of business development and legal affairs. Last February, he was named vice president of legal affairs. In his new position, Chun will focus on "strategic business development" activities.

Klitgaard will oversee Tandem's legal affairs and corporate security. He comes to Tandem from the San Francisco law firm of Pillsbury, Madison & Sutro, where he was a partner for 15 years.

Both Chun and Klitgaard will report to the office of the president at Tandem. —Juli Cortino

Lam Appointed Link President

SAN JOSE, Calif.—David K. Lam, founder of Lam Research Corp., has been named president and chief executive officer of Link Technologies Inc.

Lam replaces John Choe, one of the co-founders of Link, who resigned recently to pursue other interests. Choe had held the position of president since the video display terminal company was founded in early 1983.

Lam who founded Lam Research in 1980, had held the position of vice president of marketing and vice chairman at the semiconducter process equipment technology firm. He will remain on its board of directors.

—Eric Nee

McAfee, REI Veteran, Upped To VP Position

DALLAS—Dwayne L. McAfee has been elected corporate vice president of Recognition Equipment Inc., a manufacturer of data entry systems.

An REI spokeswoman said McAfee's position is a new one. Meanwhile, he will continue to head REI's European operations in Frankfurt, West Germany, where he has served for the past year as general manager of Recognition Equipment Europe.

Employed by REI four years, McAfee was previously with Burroughs Corp. for 10 years, the spokeswoman said.

—Kit Frieden

disabled—is co-sponsoring reer convention with Sh Productions of Santa M Calif.

The convention, sche April 15-16 at the Stamford Hotel here, marks the first t job fair has been specifica commodated to admit capped people and help the jobs in the information cessing industry, accordi Joseph P. LaMaine, vice dent and one of the found Biped (Business Infor Processing Education for t abled) Corp.

According to LaMain Ronald Reagan said, the need in the country for t vate sector to help" in are had traditionally been fe funded, such as educat handicapped."

"As a matter of fact," "We (Biped) are the very the nation that has n challenges from Was Basically, there are abou grams like this in the that are federally funded the first to be completely sector."

Biped was started in D 1981. Its students are ta only the technical skill gramming, but are give ground in general busi

ON THE M

Robert A. Cranston

—Robert A. Cranst named director of n information systems Francisco Newspap the corporate agent Francisco Chronicle Francisco Examine had previously spen Castle & Cooke Inc cicsco, a foods an company, serving r as controller of inf administrative serv had been a senior consultant with I Systems Inc. and rector of the Nation

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THE NETWORK

The Federal Communications Commission is expected to delay its March filing deadline for switched-access tariffs, sources said last week, but will require $1 subscriber-line tariffs to be filed on schedule to be effective by June 1 as planned. The delay is, in part, due to petitions filed last week by Bell Atlantic and Nynex, which argued that outstanding cost and allocation problems would render March tariffs unworkable. Both companies requested a July 2 filing deadline, meaning switched tariffs would go into effect in October.

Tandem Computers Inc. has completely rewritten its Guardian operating system for its NonStop II and NonStop TXP computer lines. The revamped multitasking operating system, first introduced in 1977, will now be called, the "BOO." The rewrite is said to relieve users from Guardian's constraints on program size.

Datapoint Corp. has asked its shareholders to express their wishes by March 4 as to whether to replace its eight directors with a six-man slate headed by New York investor Asher Edelman.

Honeywell Inc. last week said its chairman and chief executive officer, Edson W. Spencer, and vice chairman, James J. Renier, will share a newly created "executive office." Both executives will share equal power in decision-making in the company's operations. However, "There is only one chief executive officer and chairman and that's Ed Spencer but, in terms of running the five major businesses that Honeywell is in, they do plan to share that authority and decision-making power," a spokeswoman said. Asked to comment on reports that Renier is about to succeed Spencer as the company's top executive, she said to do so would be only "speculation." Renier, 55, has held dual titles with the company—vice chairman and president of the information systems unit.

Hewlett-Packard Co. has become the first to integrate a touch-screen with a mouse and a graphics package. H-P's answer to **Apple Computer's** "MacPaint" is called "Super Paint Brush." The H-P graphics product runs on the company's HP 150 touch-screen computer. A two-button mouse can be used with the graphics program. At the same time, the user can implement the touch-screen, or use the personal computer's keyboard. H-P also expects to be able to hook a graphics tablet onto the HP 150, so its graphics program can be used via a tablet. The Super Paint Brush program has been adapted from the 2700 graphics computer that H-P introduced four years ago. The 2700 has since been phased out of production.

Convergent Technologies this month demonstrated a new version of its NGen workstation to its user community. The slightly larger version of NGen has telephone integration capabilities that let the user plug his telephone handset into a speaker jack on the NGen. Conversations can be digitized and stored on disk. Features include auto-answer, auto-dial and a 1200 baud modem. The NGen with the "Telephone Manager TM-001" has not yet been officially introduced. As for the 7300 PC being built for AT&T, Convergent says it is "on schedule" with its production. By the end of last year, some 1,000 had already been built. But, industry observers note that the desktop, Unix-based PC has been delayed from January to February, and now to March. As previously reported in MIS Week, the 7300 is expected to feature a mouse, windows and built-in connections for telephones. The 7300 is reported to have a half-height 5.25-inch floppy disk and an internal 10-megabyte disk. It is also expected to have a 12-inch screen and plug into AT&T's System 85. Convergent says rumors that the 7300 will have a 20-line display are unfounded. The company also denies it is having software problems with the 7300.

Ask Computer Systems Inc., Los Altos, Calif., intends to file a registration statement for its third public offering of common stock. The offering will consist of about one million shares to be issued and sold by Ask, and about 500,000 shares to be sold by certain shareholders. Based on a Feb. 19 closing price of $23.50 per

IBM Venture Gets 1s

By SHARON SCULLY

NEW YORK—A joint venture of International Business Machines Corp. and Merrill Lynch Co. formed last March to deliver real-time stock quotes and financial services data to Merill Lynch's 10,000 brokers nationwide made public last week its first networking deal.

The venture, only recently named International MarketNet (IMNet), said it has entered into an agreement with the Public Broadcasting Service granting IMNet an option to purchase transmission capacity on all of PBS's commercially available vertical blanking interval broadcast bandwidth.

Initially IMNet has the option to purchase four of PBS's commercially available VBI lines for a 10-year period and the right of first refusal on all 17 other VBI lines as federal regulators approve their commercial use. Two additional VBI lines are now commercially available.

The company said such utilization of the PBS national broadcast network would provide it with coverage of up to 96 percent of the U.S. population. Terms of the agreement were not disclosed, although PBS officials said selling VBI capacity could "bring in tens of millions of dollars a year to the nation's public broadcasting system." PBS in recent years has suffered severe cuts in federal aid.

PBS, which has incorporated a separate for-profit subsidiary, PBS Enterprises, said its 300 member stations would receive an initial payment of an undisclosed amount from IMNet for agreeing to carry the data signal, and payments are set to increase as the venture's subscriber base grows.

IMNet will market "a data delivery and office automation system" based on the IBM 3270 personal computer and IBM's Systems Network Architecture (SNA) to Merrill Lynch's brokers "later this year," it said. Future plans call for the venture to market the 3270-based system outside Merrill Lynch to the financial services and real estate industries, the company said.

"The 3270 is our workstation of choice," an IMNet official emphasized, "and we intend to follow IBM not only in that, but also in IBM's strategic direction in capabilities, which the companies said "could be equipped with a broadcast receiver/decoder to enable to the machine to receive market data" and could be linked to branch and regional mainframes "to receive proprietary programming such as that produced by brokerage account executives."

If the project is successful, the combination of television and computer technology could emerge as a new application for personal computers. IMNet will transmit computer data, including a real-time stock quote data base developed by Monchik Weber, along with PBS's regular transmissions of educational and entertainment shows.

In an ordinary television signal, there are 525 horizontal lines that make up a picture, and 2 additional lines, called the vertical blanking interval, that appear as a black bar on the screen when the set is improperly tuned.

The data portion of the PB video signal would not be visibl on ordinary television sets, bu would appear as text on th screens of personal computer equipped with small television re ceivers and special decoders.

IMNet said it intends to delive

BellSouth's CPU Vendor Pacts Set

BIRMINGHAM, Ala.—Bell South Corp.'s unregulated equipment arm is expected t announce deals with one o more computer vendors thi week.

A spokesman for Birming ham-based BellSouth Advanced Systems Inc., the custome premise equipment (CPE subsidiary of Atlanta-base BellSouth, said a press co ference was set for th Wednesday. But he woul offer no details.

In a previous interview wit MIS Week, however, Micha K. Harrell, president of A vanced Systems, had said t company planned to be selli office computers by April He also said he expected negotiate deals with two co puter vendors, which he c clined to name.

Harrell said the compa would market minicompute micros, dumb terminals a peripherals, as well as en

shares on Dec. 19-20. The 3,000 shares represent Jenrette's entire stake in the company. Jenrette is the first Advanced Micro trader to report since Sept. 14, when the stock was fetching $39.37. He is also the first insider to have reported a buy, though insiders as a group have sold 14,000 shares since August. Advanced Micro was selling for as much as $41.12, its all-time high for 1984, and the same year was as low as $25.12; its all-time low was 12 cents. The company makes monolithic integrated circuits and trades on the New York Exchange. Estimated earnings for 1984 are somewhere in the neighborhood of $2.75, topping 1983's $1.23.

With earnings for the last 12 months coming in at 60 cents per share, same as the 60 cents for 1983, **Endata** was next biggest buy of the week, as director **George Gillett** bought 10,000 shares Dec. 4 at $6.50 and now holds 11,000.

Earnings are always in the black at **Informatics General**, but for the 9 months ended Sept. 30, they were only 29 cents, compared to 83 cents for the year-earlier period. **Ronald Freeman**, an Informatics vice president, was undeterred by those numbers and, attracted by the stock's $14.25-$14.37 price, bought 3,150 shares Dec. 21. The 3,150 represents his entire holdings. Be that as it may, Informatics shot up to $24.25 in 1984 and an even headier $34.50 in 1983. The company makes computer products and trades on the Big Board.

Daisy System's president and CEO, **Aryeh Finegold**, let go of another 45,000 of his holdings; the latest sale leaves him with 594,888 shares, valued at roughly $1.1 million. The trades occurred Dec. 19 to 27 and brought him $24.50 to $26 per share. He earlier reported selling 20,000 in November for $25.75. Daisy has shown strong earnings for 1984 at 73 cents per share over the year-earlier's 17 cents. The company makes computer-aided engineering systems and trades over the counter.

New York Exchange stock **Data General** had four insiders selling, the first being vice president **James Campbell** who knocked out 5,000 shares Dec. 14 for $52. The best price, $52.50, was received by vice president **David Chapman** who sold 600 Dec. 11; his holdings are 29,152. Vice president **Anthony Nicoletti** and senior vice president **Frank Silman** sold 2,830 and 1,509, respectively, on Dec. 14 at $51 and $51.75. Nicoletti still holds 28,572 and Silman, 19,991. Data General hit a December high of $59.75. Earnings for 1984 are coming in at around $3.08 per share; for 1983, they were 96 cents. Since August, insiders have reported sales of 90,539 shares.

With earnings reports of $1.04 per share, **Tandem Computers** has also seen substantial selling activity lately. Of five insiders, the 20,000 block dropped by director **Morton Collins** made the biggest splash. It went for $17.25 Dec. 5; he holds 9,904. His comrades **Lawrence Laurich, Dennis McEvoy** and **Charles Yazel**, sold 2,000, by Laurich, and 1,500 each by McEvoy and Yazel. The price range was $17.75 to $18.12. Tandem makes multiprocessor computer systems and trades over the counter.

Compaq Computer, with estimated earnings of 37 cents per share against 13 cents for the previous year, is nonetheless trading in the range of $6.50 per share, which is where insiders **Joseph Canion** and **William Murto** sold 70,000. The trades occurred between Dec. 17 and 28. Each reports holdings of 561,247. Murto, a vice president, sold 30,000 and Canion, president, sold 40,000. Compaq makes portable personal computers and has gone for as high a price as $14.37. The stock trades over the counter.

Over-the-counter-traded **Altos Computer Systems** reported even more selling this week—40,000 shares between Dec. 3 and 20—by senior vice president **Ronald Conway**. He received $7.12-$9 per zshare and still holds another 95,000. He sold 5,000 in November and another 5,000 in August. His trades bring to 462,281 the number of shares insiders have sold in the last six months.

Over-the-counter-traded **Comshare**, a vendor of timesharing computer services had an 8,000-share buy by vice president **Donald Walker**, who liked the $6.87 price he paid in a private deal Dec. 21. The stock bottomed out at $6 per share. The company had a deficit of 6 cents for the last six months, compared to 6 cents in the black for the same period a year earlier. But earnings for all of 1984 are registering on the up side, with 24 cents to the positive against 31 cents for 1983. This year's high was $13.62.

Lotus said its year's net income was $36 million, or $2.24 per share, compared with $14.3 million, or $1.02 a share, for 1983.

Fourth quarter revenues for 1984 were $50.4 million, compared to $23.9 million for the fourth quarter in 1983, while revenues for the year were $156.9 million, almost tripling the $53 million reported in 1983.

Jim P. Manzi, Lotus president and chief operating officer, said the great increase in revenues in 1984 was "due to vigorous de-

second product, Sym
main at the top of th
industry's best-seller
the company's third
Jazz, made for Apple
Macintosh personal
"is receiving very
comments from beta-

But analyst Richar
vice president of pr
Corporate Software
Waltham, Mass., said
in Lotus's sales was d
ily to the success of
Symphony contributin

Compaq's Net Keeps Soa

HOUSTON—Compaq Computer Corp. seems to be continuing its high-flying ways by reporting what one analyst called "very impressive" earnings for 1984, its second year of operation.

The company reported net income for the year at $12.86 million, or 47 cents per share, compared to $2.6 million, or 13 cents per share, in 1983, excluding an extraordinary gain or $2.1 million for that year.

Compaq said its 1984 revenues of $329 million set a record for the fastest second-year growth by any company in the computer industry. The company had set the industry record for the fastest growing first year as well, with sales of $111 million.

Bob Grandhi, an analyst with E.F. Hutton, said h
Compaq's claim of
fastest second-year
correct. "Shipments
ings were phenomen
he said, adding that
looks bright because
business computer se
tinues to grow.

Compaq's fourth qu
ings for the period en
were also strong. Th
reported net incom
million, or 25 cents
sales of $112.6 millio
compared to incom
million, or 15 cents
before extraordinary
revenues of $52.2 mill

Responsible in pa
company's strong sa
success of its Deskpro

Loss Mounts At Datac

MOUNTAIN VIEW, Calif.—Datacopy Corp. reported a 103 percent increase in revenues for fiscal 1984, while nearly doubling its losses.

For the year ended Dec. 31, the image processing system firm reported revenues of $3.7 million, up from $1.8 million in 1983. Net losses for 1984 totaled $2.7 million, or 64 cents per share, compared to $1.4 million, or 48 cents per share, in 1983.

For the fourth quarter, Datacopy's revenues totaled $1.03 million, up 50 percent from 1983's total of $690,472. Net lo
quarter just ende
$853,974, or 20 cents
compared to $571,396,
per share, in 1983.

Order backlog at the e
1984 increased to $1
nearly three times gr
the $467,000 reported
fiscal 1983. The bulk
crease in the backl
$640,000, came in the fo
ter of 1984, said Jame
vice president of mar
planning for Datacopy

United Tel Net Up 1

KANSAS CITY—United Telecommunications Inc. reported that its annual earnings per share grew 16 percent in 1984 despite a flat fourth quarter.

Net income for the year was $235.2 million, or $2.57 a share, compared to $198.9 million and $2.21 per share in 1983. Revenues grew from $2.5 billion to $2.8 billion.

For the fourth quarter ended Dec. 31, the company reported net income of $49.25 mi
cents per share, com
$43.06 million, or 47
share, for the 1983 qu
company said growt
period was primarily
payment for the comp
sale of Calma Co.

Revenues for the qu
up from $631.7 million
$750.7 million for the s
in 1984.

—K

LEVEL 1 - 1 OF 3 STORIES

February 18, 1985

SECTION: NEW PRODUCTS; Peripherals; Pg. 91

LENGTH: 212 words

HEADLINE: Eight Winchester drives dwell in single cabinet

BODY:

A total of 1.3 gigabytes on eight 168-megabyte Winchester drives is packaged in the 4120-V8, a single cabinet that occupies 6 ft<2> of floor space. I/O requests do not have to be queued because the multiple drives allow concurrent access to eight disks. Thus up to eight users can use the same file simultaneously, with an average seek time of 20 ms.

"Disk mirroring" means that the operating system can store duplicate data on an independent disk drive, ensuring that the data can be accessed even if one drive should fail. Because information is duplicated on mirrored pairs, the user can perform read operations on both mirrored disks at the same time, which speeds reads to disk and keeps queuing to a minimum.

The V8 uses a dedicated power supply for each disk drive and two cabinet power cords, each supplying power to four drives. The minimum configuration of the cabinet and four drives is priced at $50,000. Additional sealed Winchester disk-drive modules can be added in increments of two, at $20,000 per pair, up to a maximum of eight modules per cabinet. The maximum configuration of a V8 system, eight drives and cabinet, costs $88,000. Systems are available now. Tandem Computers Inc., 19333 Vallco Pkwy., Cupertino, Calif. 95014. Phone (408) 725-6000

GRAPHIC: Picture, no caption

Tandem Profit Up 39.5% in 1st Qtr.

CUPERTINO, Calif. — Tandem Computers, Inc., reported first-quarter earnings of $14.03 million, or 34 cents a share, up 39.5 per cent compared with the $10.05 million, or 24 cents a share, in the like period last year.

Sales of $159.65 million, were up 26.3 per cent from $126.37 million.

Tandem attributed its improved earnings to an asset and inventory management program and to efforts to control the number of employes at the company. In fact, Tandem reported, its employe count during the quarter dropped from 5,223 to 5,186. Tandem also attributed its increased sales in part to price cuts it made late last year on its NonStop II systems, price cuts which brought in more new customers, Tandem said.

ELECTRONIC NEWS, MONDAY, FEBRUARY 18, 1985 79

years ago. Investors in public securities markets, having few investment vehicles, have viewed artificial intelligence with general disinterest but with a touch of curiosity, skepticism, and bewilderment.

This is changing very rapidly, and 1985 is shaping up to be a critical year for AI, both in the marketplace and in the investment community. Investors in public securities markets, having few investment vehicles, have viewed artificial intelligence with general disinterest but with a touch of curiosity, skepticism, and bewilderment.

This is changing very rapidly, and 1985 is shaping up to be a critical year for AI, both in the marketplace and in the investment community. of these corporations will move these systems from a research environment out into an operating environment, requiring the purchase of much larger volumes of equipment. In the eyes of investors, this significant financial commitment by corporate America will substantially improve the credibility and legitimacy of the entire technology.

$5000 to 10,000, including operating environment software.

Indeed, Texas Instruments has already paved the way toward low-cost expert systems with its Personal Consultant software, which operates on the TI Professional Personal Computer, although this product has limited capabilities in comparison with LISP machine-based systems.

applications.

We anticipate hearing of the first of these imbedded expert systems during 1985 in areas which are hard to predict and fun to imagine and will surprise us all. Nevertheless, this will broaden the level of interest in AI throughout the computer industry as well as the investment community.

William H. Shattuck covers the software industry for Montgomery Securities, San Francisco.

Street Talk

Any Wall Street followers who at the beginning of the year predicted a rally in high-technology stocks must be feeling pretty smart these days. The surge of buying that began in early January has been especially strong in the over-the-counter market, where many technology issues are traded.

From Dec. 31, 1984, through last Wednesday, a number of high-tech stocks have enjoyed percentage rises that many stocks do not experience in the course of two or even three years.

Convergent Technologies Inc., buoyed by the presence of highly regarded new chief executive Paul Ely Jr., rose 75 percent in that time, to $10.50 from $6. Also high-flying was **Stratus Computer Inc.**, up 63 percent, to $15.50 from $9.50, on continued growth and the news that **IBM** has agreed to remarket one of the company's fault-tolerant computer systems.

The originator of fault-tolerant computers, **Tandem Computers Inc.**, proved it too could reignite investor interest. Aided by at least one strong buy recommendation, Tandem stock moved up 33 percent from $19.50 in December to open last Thursday at $26.

The breadth of the surge perhaps shows up most clearly in the performance of those mutual funds that invest solely in technology stocks. Between Jan. 2 and last Wednesday, for instance, the **Fidelity Select Technology Fund** advanced 18.5 percent, to $24.79 from $20.91.

Assuming a basic sameness in the fund's holdings from Oct. 31—the date of the fund's last public report—Fidelity would have benefited from solid gains in the stocks of software leader **Lotus Development Corp.** (up 28 percent) and CAD/CAM company **Daisy Systems Corp.** (up 34 percent), as well as others.

PERCENTAGE INCREASES IN SELECTED COMPUTER STOCKS
(Dec. 31 - Feb. 6)

Lotus	+28%
Daisy	+34%
Convergent	+75%
Stratus	+63%
Tandem	+33%

The recognition of Wall Street is nothing new to Lotus or Daisy, however. It is new to **Wyse Technology Inc.**, a San Jose, Calif.-based display terminals manufacturer that went public last October at $7 a share and finally started moving higher last month. The stock opened at $11 a share Thursday morning.

"The investment community started to talk more about the company," Wyse's chief financial officer Douglas Levick said about the stock's rise in price. The company also released financials for the third quarter, he said, which showed per-share earnings gains of a whopping 237 percent.

The first part of the year has also been kind to some of the stocks that were hit hardest in 1984. Between December and last Wednesday, for example, the stock of **Esprit Systems Inc.**, another display terminals manufacturer, more than doubled, climbing to $3.87 from $1.88. Esprit chairman Anthony Palladino said the company's recent quarter, which showed a tiny operating profit, may have looked good in light of the sizable quarterly losses suffered by competitors **TeleVideo Systems Inc.** and **Visual Technology Inc.** The fact that Esprit was the first company listed in a Feb. 11 *Forbes* article on potential bargain stocks did not hurt either, Palladino said.

file under Tandem

fault-tolerant systems under its own label. Not only could this generate substantial revenues, but it is also a major vote of confidence in Stratus technology and management. **LES**

Tandem reported better than expected first quarter results. Revenues increased 26% to $159.7 million, while earnings per share were an impressive 42% ahead of year ago level, at $0.34 versus $0.24. Operating margins were 14.1%, versus 13.4% a year ago and 11.7% in the preceeding quarter. The company's new-found emphasis on cost control is finally paying off in terms of improved profitability. The total headcount declined again from 5,223 at the end of the fourth quarter to 5,186, despite a net addition of 31 to the salesforce. As a percentage of sales, the high-end TXP was down to a 65-70% contribution from 75% in the fourth quarter due to greater emphasis on using the NonStop II as a new account opener. The quarter was a particularly good one in terms of new customers, with more than 40 added to the client base.

Tandem continues to be very cautious regarding the second quarter (last year's quarter showed a 16% gain in revenues and a 70% drop in earnings). Its goal is to maintain revenues and margins at the first quarter level, but this may prove difficult to do. IBM's recent alignment with Stratus may cause some customers to hesitate as they await IBM's plan to become clearer.

We have raised our 1985 and 1986 earnings estimates to $1.30 and $1.65 respectively, up from $1.25 and $1.60. Should the second quarter be flat or up sequentially, our estimates would likely prove to be too low. **LES**

LEVEL 1 - 1 OF 1 STORY

Financial Times

February 1, 1985, Friday

SECTION: SECTION II; International Companies; Pg. 19

LENGTH: 300 words

HEADLINE: IBM deal threat to Tandem

BYLINE: BY LOUISE KEHOE IN SAN FRANCISCO

BODY:

IBM is expected to enter the market for fault-tolerant computers currently dominated by Tandem Computer, after signing an agreement with Stratus Computer. According to Stratus, the agreement will give IBM the right to market Stratus' fault-tolerant computers worldwide on a non-exclusive basis.

Fault-tolerant computers are designed not to fail, even if some components of the system go down. They are used primarily in transactions processing by banks, financial institutions, airlines and stores. According to market researchers, the transaction processing market is growing at an annual rate of about 30 per cent and is currently valued at about $25bn.

This is believed to be the first time IBM has agreed to market a computer system made by another company, although it has sold peripheral products from other makers.

The terms of the agreement were not released, and IBM said: "We cannot speculate upon our intentions. We may market a fault-tolerant computer system."

The agreement would, however, appear to provide IBM with a ready-made product line. Stratus makes a range of machines, starting with a $100,000 entry-level system, which can be built up into a "super-minicomputer" system worth several million dollars by attaching additional processors.

Industry experts believe IBM's entry into this sector of the market could have a serious impact on Tandem, the current market leader, with 1984 sales of about $530m.

"Tandem has positioned itself as an IBM competitor," noted Mr O. M. Serlin, president of Itom International, a recognised expert in the faults tolerance market place. "This agreement cannot be good news for Tandem."

Stratus has been the most successful of several companies that have attempted to compete with Tandem, and had 1984 sales of about $42m.