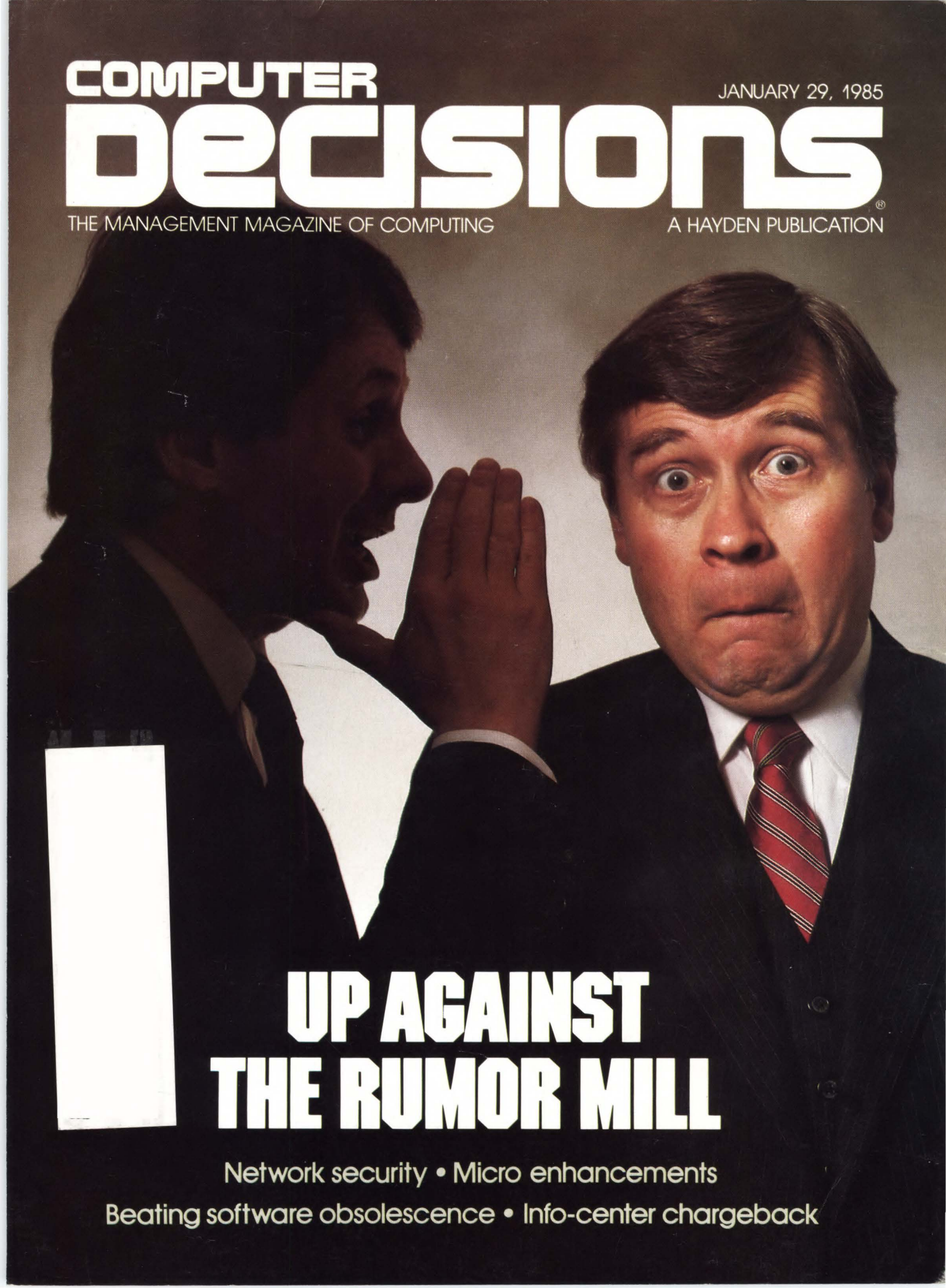


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JANUARY 29, 1985

THE MANAGEMENT MAGAZINE OF COMPUTING

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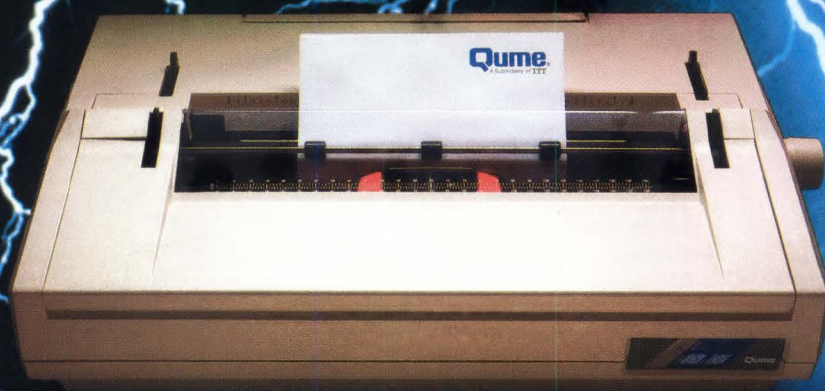


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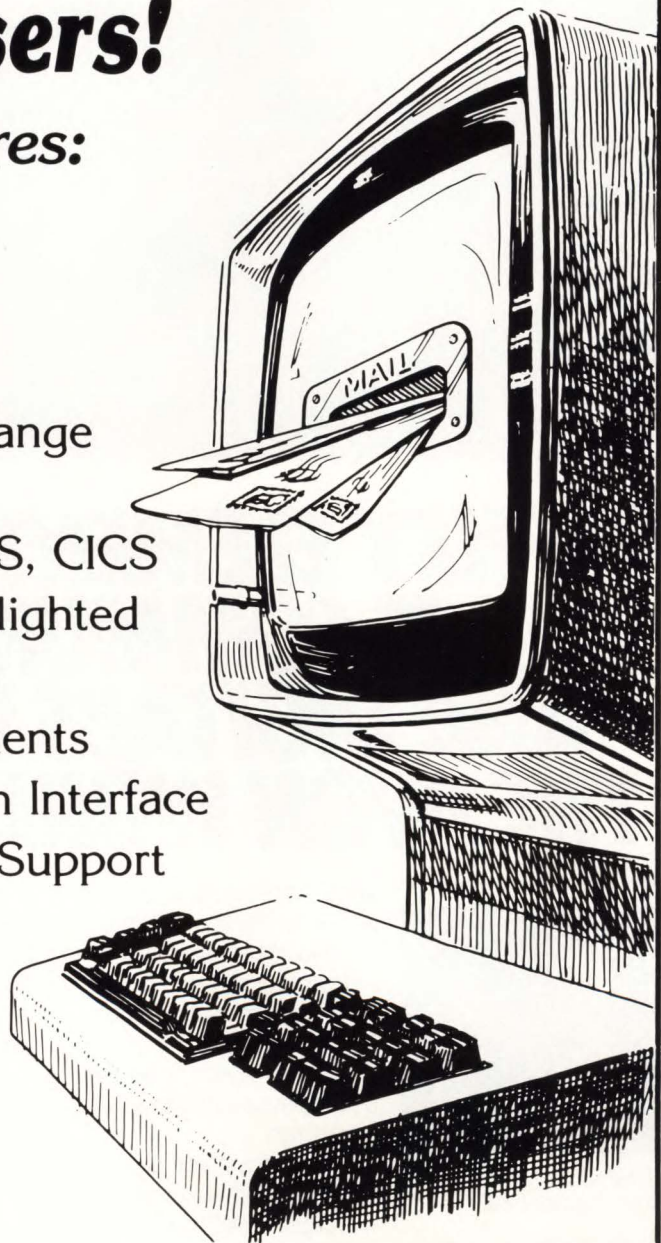
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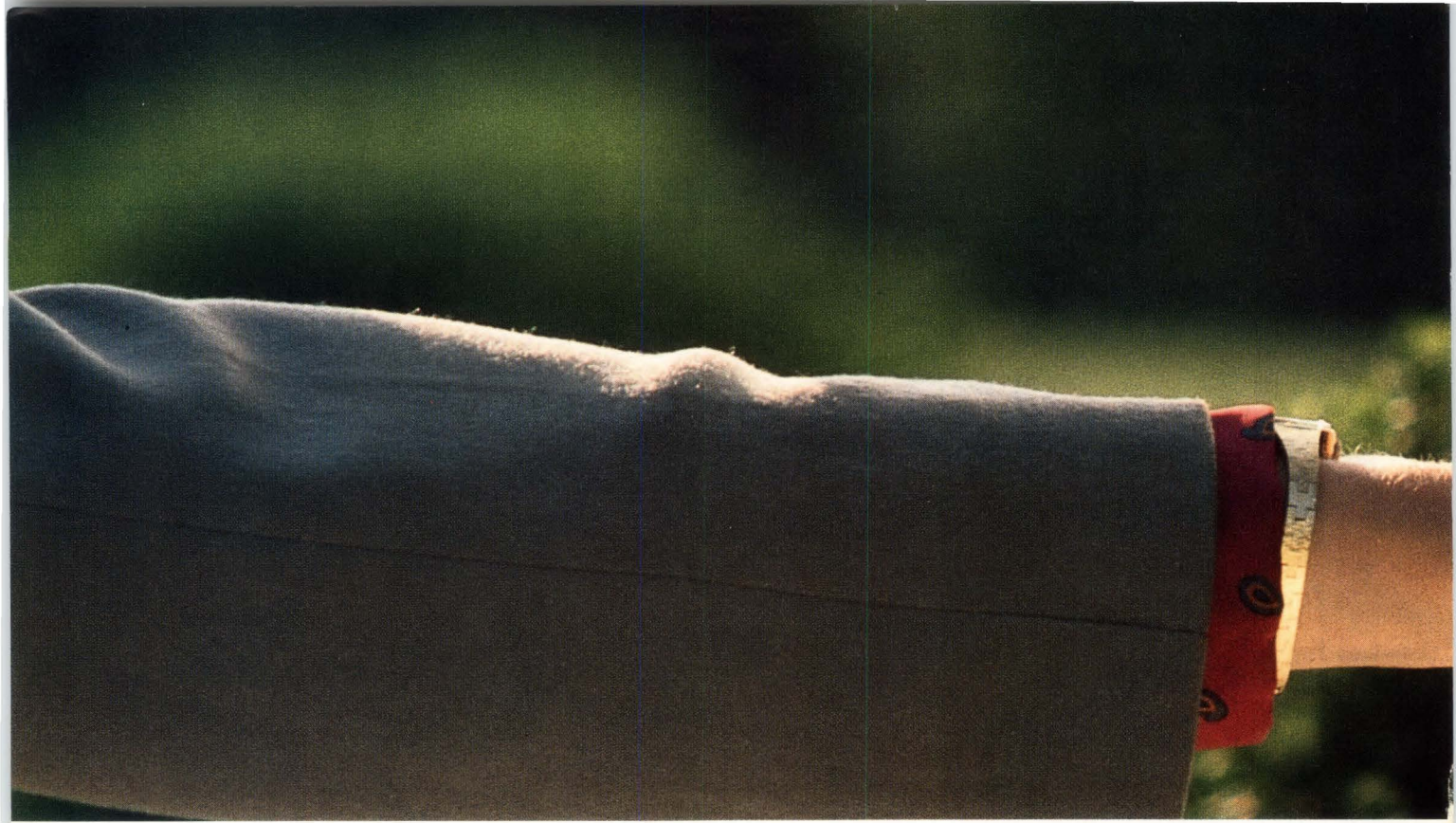
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"THE KEY ELEMENT IN OUR WORLD IS COMMUNICATION. AND DIGITAL'S VAX IS TYING THE AVON WORLD TOGETHER."



Frank Giannantonio
Director of Information Services
Avon

There are few companies that understand the critical importance of communication better than Avon. So when it came time to choose an office automation system, the company evaluated all three leaders in the field.

The ground rules were these:

The system would have to use personal computers as universal workstations, for profes-

sionals, managers, secretaries and administrative staff alike.

It would have to network the variety of computers made by other companies which Avon was already using.

It would have to be elegant both in physical design and in ease of use.

The one system that perfectly matched Avon's needs was Digital's VAX™ computer – the best-selling 32-bit computer in the world – with ALL-IN-1™ office management software.

"IT DOES EVERYTHING WE WANT IT TO: PERSONAL COMPUTING, OFFICE AUTOMATION, EVERYTHING!"

Frank Giannantonio explains. "The key was this: were

we able to do more with this system than any other one? Would it let us communicate with our other systems better than any other one? And the answer both times was 'Yes.'"

The 200-plus employees linked to the system at the Rye, N.Y., data processing headquarters have access to every function necessary to do their jobs effectively via a single workstation at each desk.

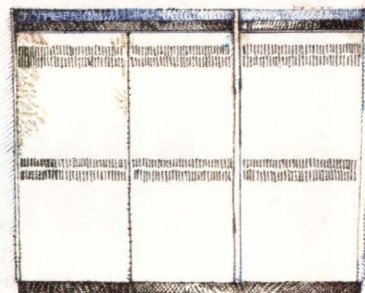
A plain English, menu-driven format appears on screen, so people can incorporate time-saving applications into their daily work routine. These include, among others, word processing, electronic mail, desk management tools and graphics.

Giannantonio elaborates. "You can come in in the morning,

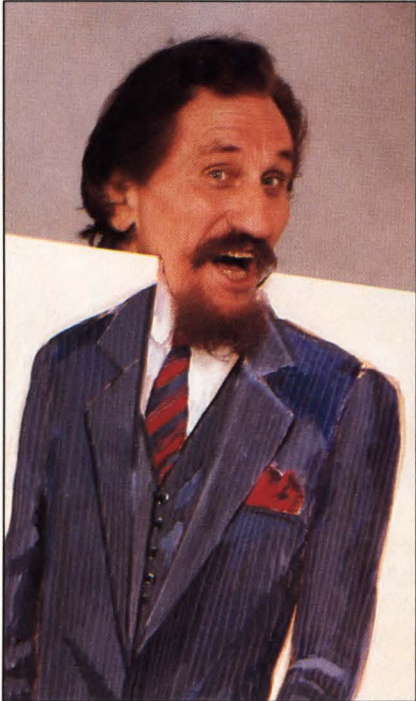
turn on your personal computer, and go right into the ALL-IN-1 system. From any of the various kinds of personal computers we use.

"The communications capabilities are very significant."

In addition to enormously enhanced individual communications capabilities, VAX computer



power makes a vast difference in the way people communicate with each other. For example, scheduling meetings.



COVER STORY

74 AGAINST THE RUMOR MILL/
Martin Lasden *Staff morale may plummet if you don't stop the whispering.*

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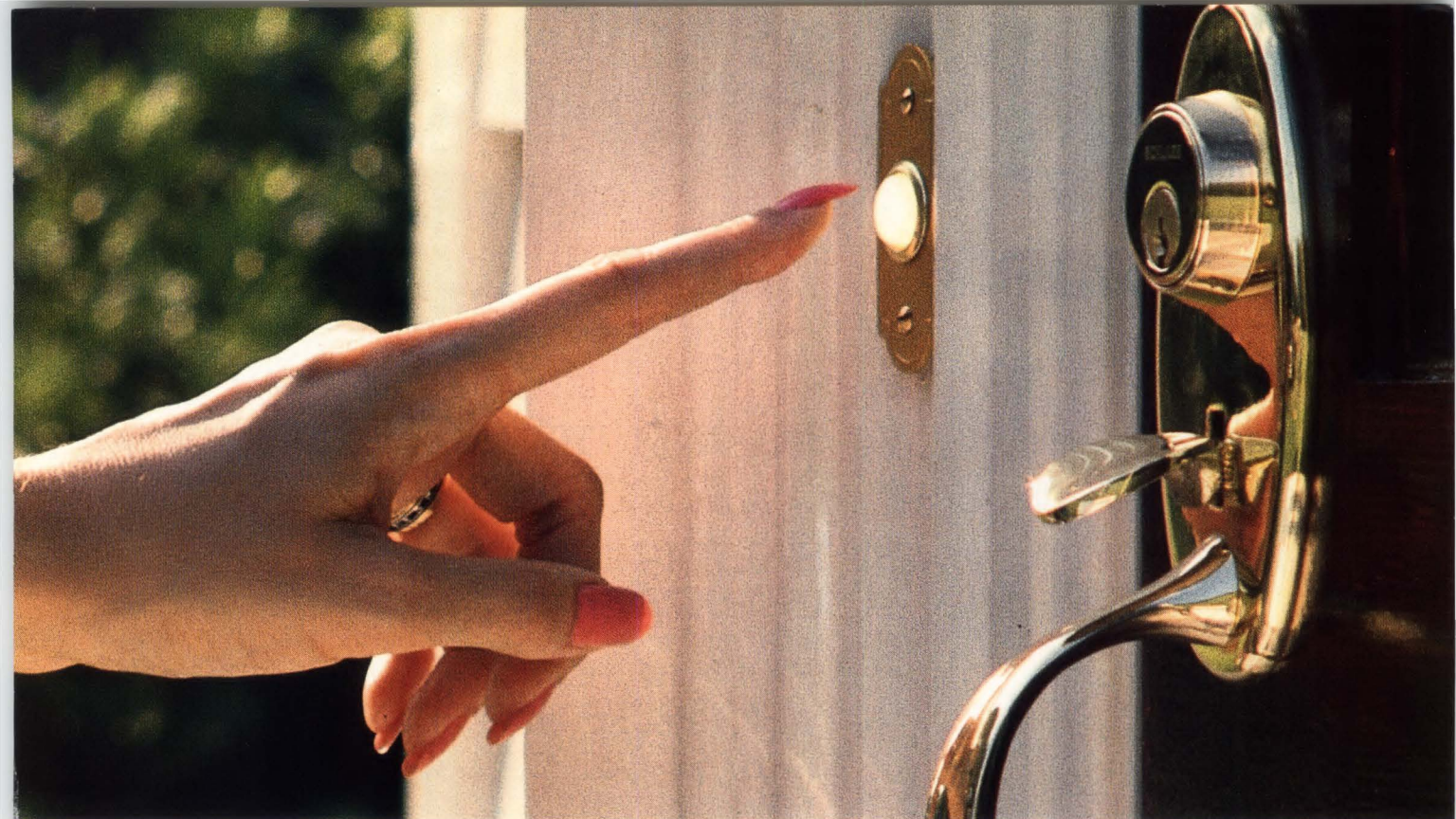
128 USERS MOLD OA/Lamont Wood
Personal-computer users are shaping the course of OA.

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COVER PHOTO: Ted Hardin





"You don't have to call up somebody and say, 'I'd like to reserve the conference room.' It gets done automatically. The secretary just keys it in, and checks the time against everyone's schedules."

"PRODUCTIVITY GAIN IS JUST ABOUT 53%."

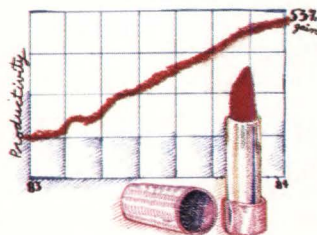
Menus and operating commands for these and other applications have been engineered in a consistent format, often requiring just two keystrokes to complete a function. Tasks can be performed without interruption. In preparing reports, for example, users can reference a chart on screen and then return directly to the report.

Not surprisingly, with fewer interruptions and immediate access to important information, the VAX system streamlines office efficiency.

To put it simply, Frank Giannantonio says, "People are becoming more productive."

Avon conducted a test to see just how much more.

Among professional and managerial personnel, productivity increased approximately 23 percent. Among secretarial



and administrative staff, the increase was even more dramatic, at 53 percent.

Those kinds of savings alone might have justified the cost of putting a VAX system to work for Avon. But there was more involved in the company's decision.

As Frank Giannantonio says, "We did not even consider the indirect savings from the productivity gain as cost justifications. They were added benefits."

"We used only the direct savings. And the direct savings amounted to a return on investment in one year."

"That's just about \$1 million."

"I CAN QUICKLY GET INFORMATION TO PEOPLE - AND JUST AS QUICKLY GET IT BACK."

There are other savings that are harder to quantify. "Like the fact," Giannantonio says, "that now I get information sooner.

Which means I can make decisions sooner. Information flows very quickly - very quickly."

Some Avon managers are connected to the VAX system from their homes. So if they've been away on a business trip or a vacation they can key into the system and know what's been happening even before they come back to the office. No more wasted time trying to catch up.

Time itself is being redefined. Through DECnet™ networking software, Avon plans in the very near future to link its Rye headquarters and domestic branches with its overseas offices. One of Avon's London managers was quick to see how a VAX computer could make the difference in time zones between his office and New York work to Avon's advantage.

"His first comment when he saw the system," says Giannantonio, "was 'I now have the opportunity to prepare a lot of information for New York during the first five hours I'm in, so that when you come in, you'll instantly know exactly what's happening in the European area.'"

"Of course the same is true," Giannantonio adds, "in every

one of our other locations.

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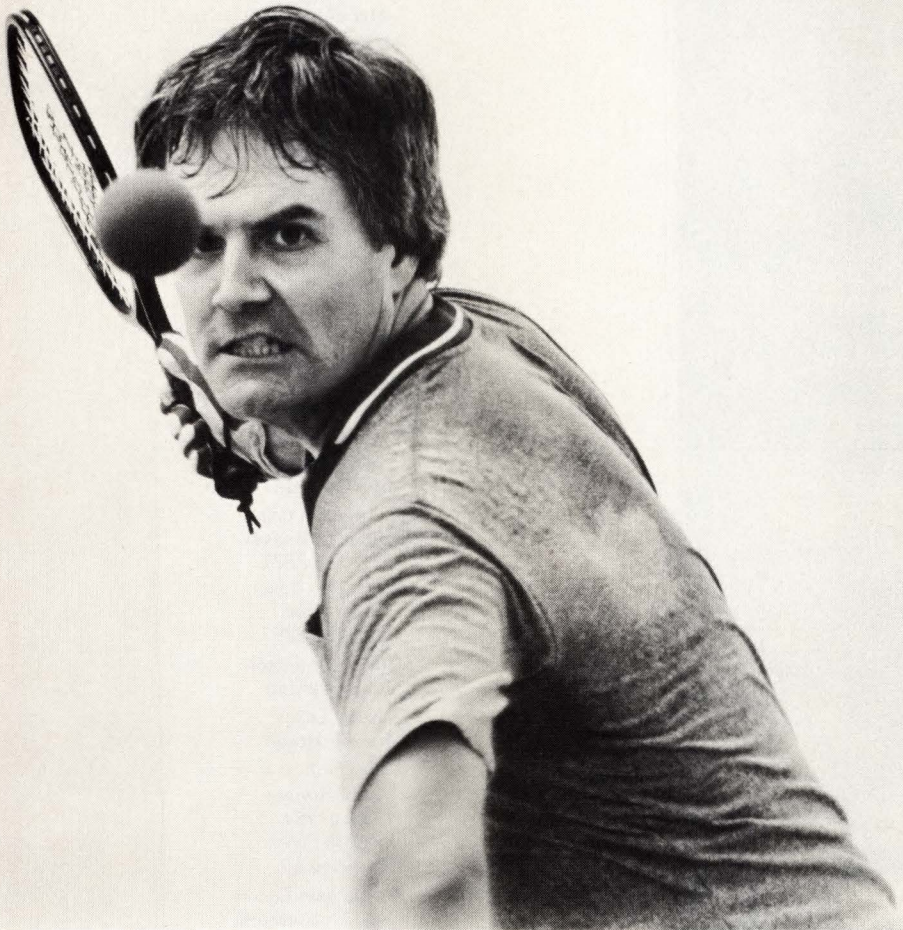
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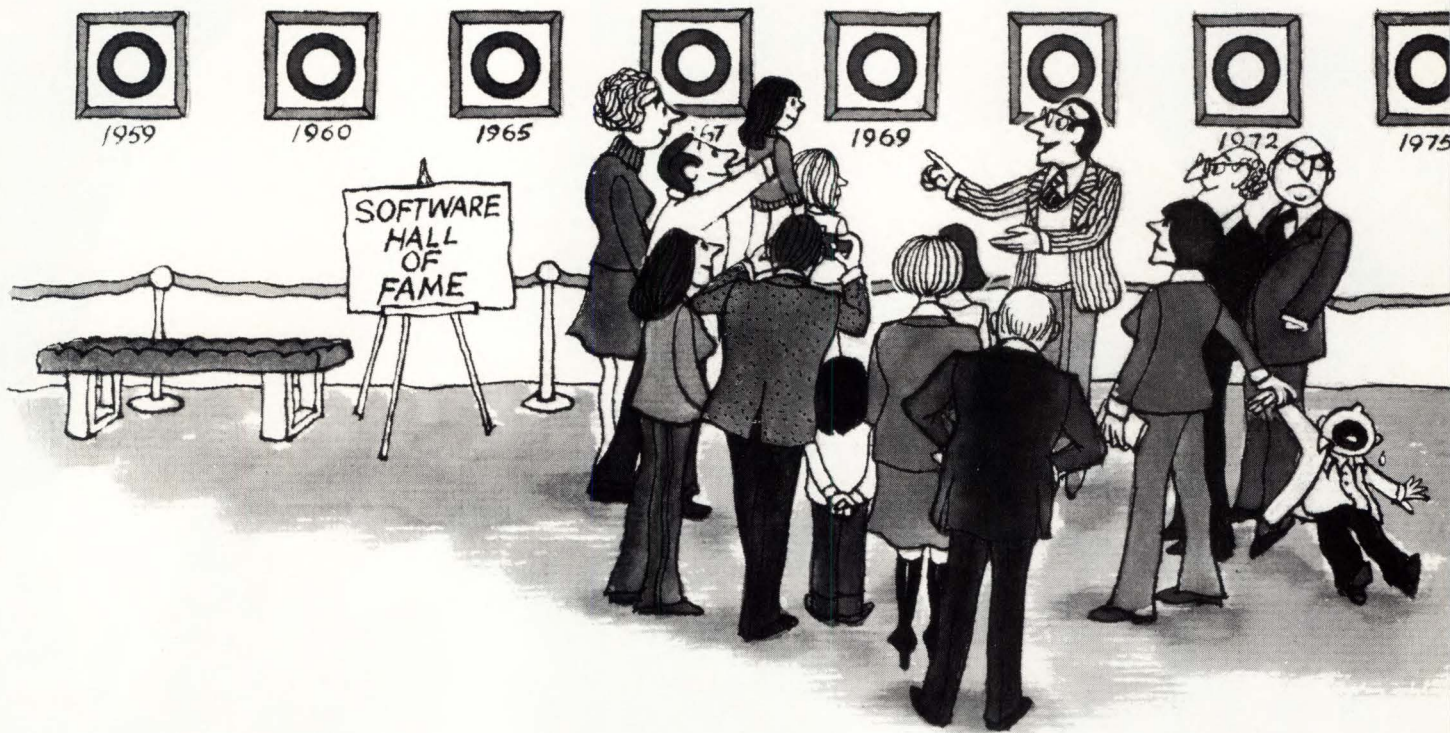
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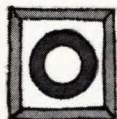
1978



1979



1980



1982



1983



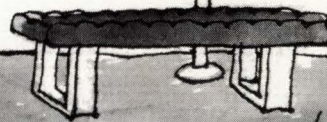
1984



1985



1986



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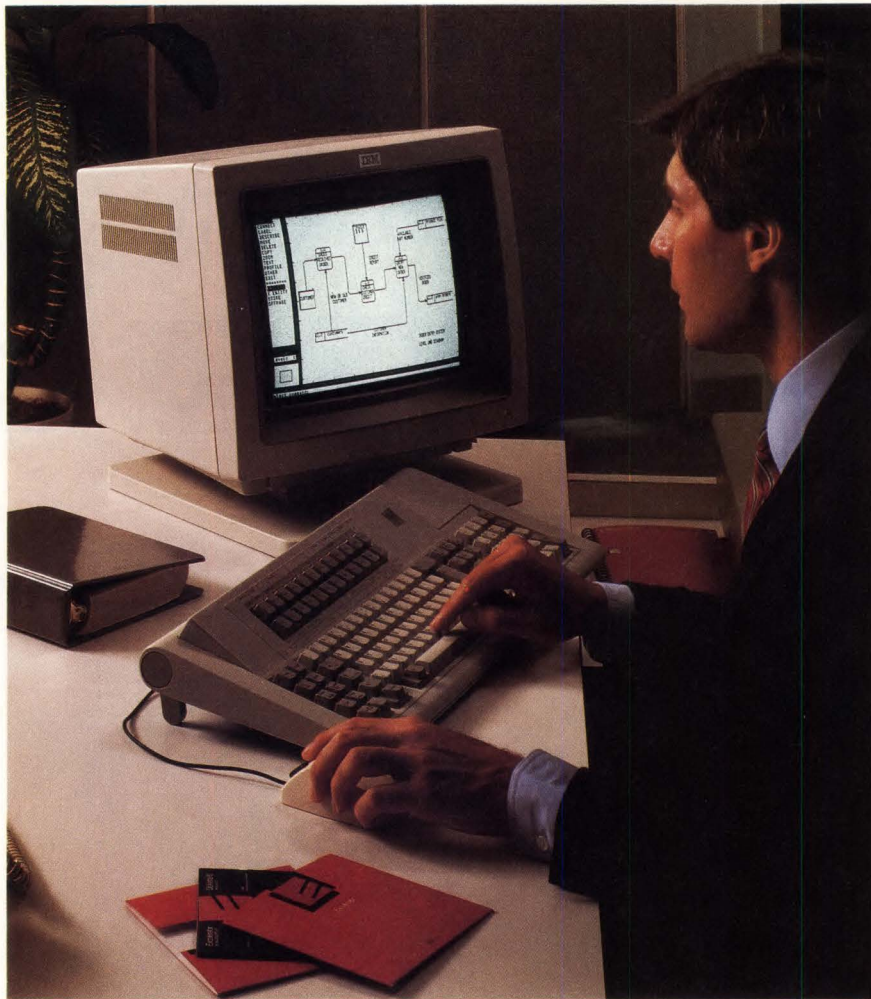
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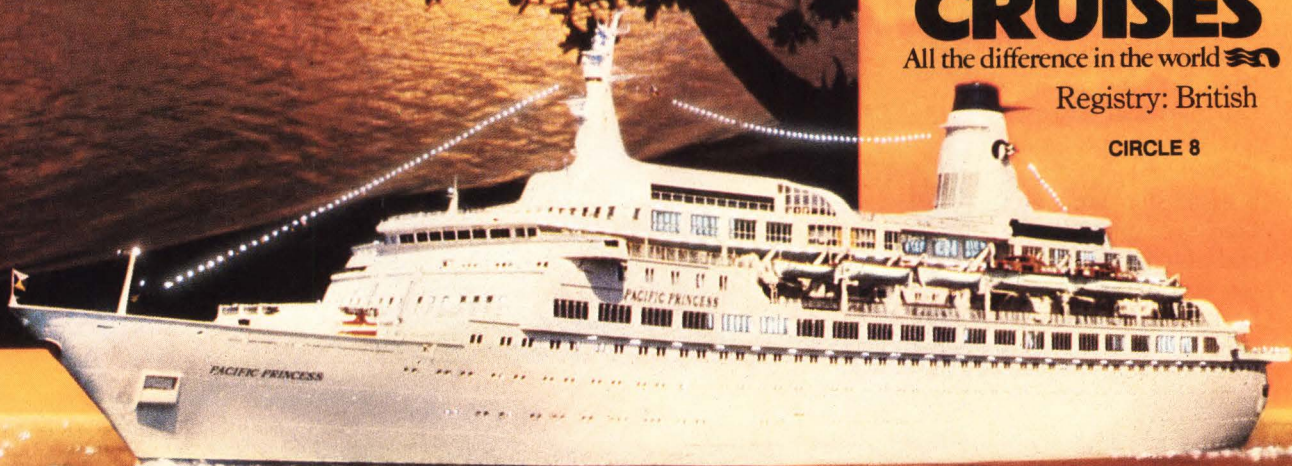
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CIRCLE 8



SAILING UNDER FALSE COLORS

Decades ago, I learned why checking job applicants' credentials is a good idea. An editor who presented a strong resume—but whose qualifications were never checked—was hired by my employer for an important supervisory job. Because his resume strained for credit, I had my suspicions, but the choice wasn't mine to make. Within weeks, it became apparent that the editor was not the high-powered talent he claimed to be. In fact, I had to take over some of his duties to ensure that the publication would come out at all, much less on time. And matters got worse: The editor's first article was revealed to be outright plagiarism. The chief editor finally came to his senses and fired the man, but by this time, the rest of the staff was outraged and hostile.

Checking credentials is a time-consuming chore, and hurried hiring is often the norm. A candidate appears particularly well qualified and hints that other offers cannot go unanswered for long. You're pressed for time and tired of interviewing and testing candidates for a job that should have been filled yesterday. In spite of such

pressures, you must not avoid insistent investigation of credentials.

Fortunately, services are available to check one of the most common misrepresentations: inflated academic credentials. But managers cannot rely on outside services—or the headhunter or corporate personnel department—to unmask frauds. Diligence pays off: Sometimes, it's the last reference checked that holds the key to understanding an applicant's real quali-

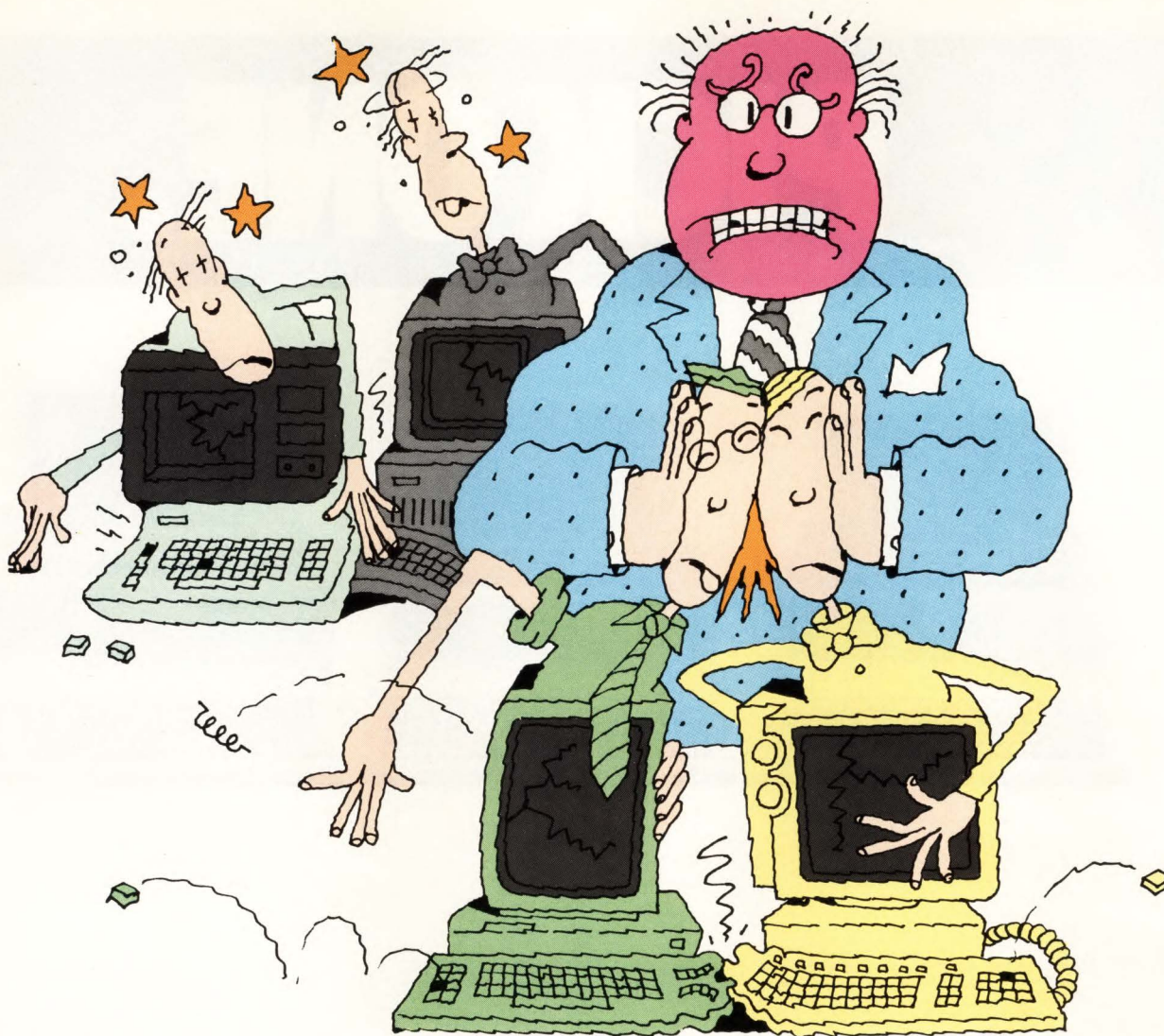
cations and experiences. Checking credentials will also help you better understand a candidate's *bad* experiences. Level with him or her and expect the same in return.

Not long after I became editor of *Computer Decisions*, I began a search for a key editor. The two top applicants had each been fired for just cause from previous positions. I asked each to explain why he had been fired. One covered up, but careful checking revealed that he was fired for malfeasance. I eliminated him from consideration for the job. The other admitted he had deserved to be fired from the job but asked for a second chance. I hired this candidate and he proved to be a valuable employee.

You have much to lose by allowing candidates who stretch or lie about their credentials to slip into your organization. You waste time and money, and disrupt your department. Worse, you deplete your stock of credibility, not only with your superiors, but with your subordinates. And when those who work for you lose faith in your judgment and fairness, you're on the way out. □



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It simply works better.

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DESKPRO™

Edited by Joseph Braue, News Editor

STALKING THE SPREADSHEET



Illustration by Dan Culhane

You're consolidating data from various departments for year-end reports. After double-checking a vast spreadsheet cell by cell, you still can't get the statement to balance. You are unaware that the figure that totals the various income accounts refers to the wrong range of cells.

You're using a spreadsheet to estimate the cost of a major project on which your corporation is bidding. You win the bid, but grossly underestimate a key expense that will wipe out your profit margin. Why? You accidentally entered data over a key-totals formula in the spreadsheet.

You're preparing a financial model listing the revenue contributions from each of 120 countries with which a corporate affiliate does business. Percentages of the total for each have been calculated and assigned to one of four fee

schedules. But the model isn't working.

The last misadventure was the one faced by Gayle Ruggeri, project leader for information services at Laventhol & Horwath, a Philadelphia-based accounting firm. The spreadsheet Ruggeri developed with 1-2-3, from Lotus Development Corp. (Cambridge, MA),

took her one week to create. It contained many complex "what-if" statements, and she found herself "messing up the absolutes with the relatives."

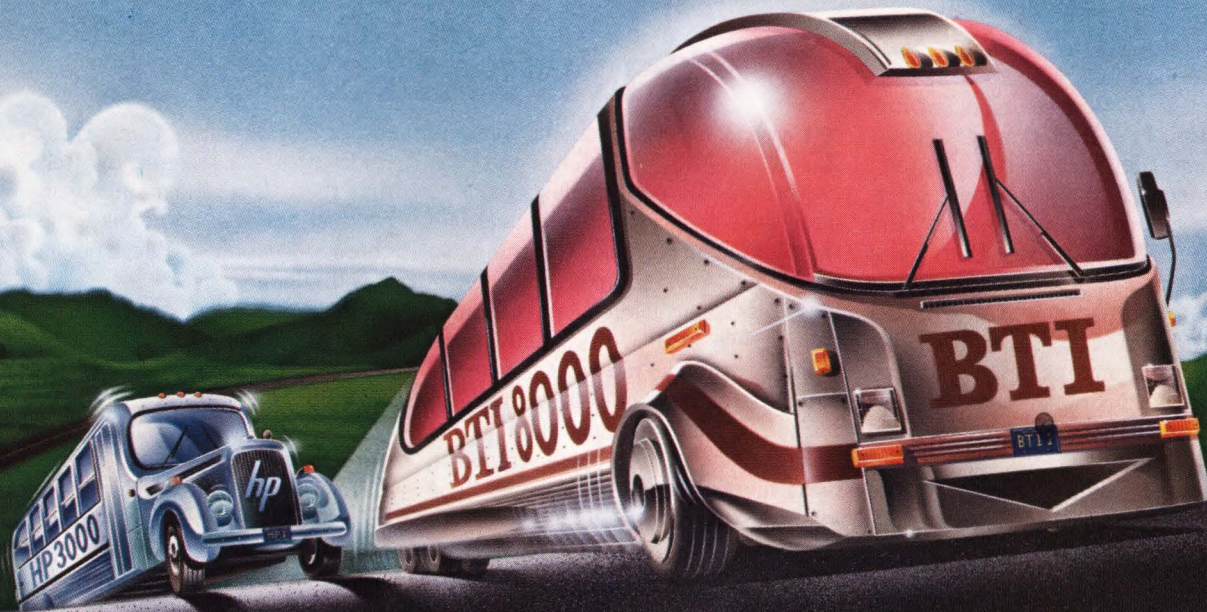
Ruggeri solved her dilemma with The Spreadsheet Auditor, a software package from Consumers Software (Vancouver, British Columbia). Without it, she estimates it would have taken her several more days just to sort out the model's problems. The Spreadsheet Auditor helps the user track down common errors in spreadsheet building. These include the use of wrong ranges, writing data over key formulas, incorrectly copying formulas, and entering correct formulas in the wrong cell range. The Spreadsheet Auditor has a structure akin to Lotus 1-2-3; most of the 5,000 copies sold in the first eight months have been to

(News continued on page 18)

INSIDE NEWS

- Tips on how to deal with hi-tech salespeople 18
- Some states tax software, others are lax 24
- Computer marts: Is all that glitters really gold? 32

The BTI 8000 outperforms the HP 3000 3 to 1



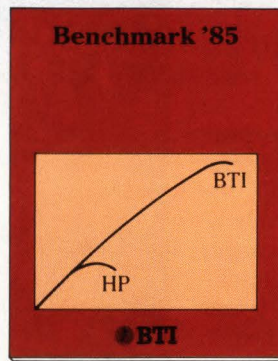
That's right! Benchmark tests prove that the latest version of the BTI 8000 can support more than three times as many online interactive COBOL users as HP's top-of-the-line Model 3000/68.

We programmed a "driver" computer system to simulate from 10 to 240 individual users performing representative data processing tasks. This provided us with a controlled and repeatable test of each benchmarked system, operating in a real world multi-user environment. Overall, we timed more than one million responses.

Under the conditions specified for the benchmark tests and simulating 200 busy interactive users (6 data base accesses per minute per user) the BTI 8000's average response time was *one second*.

The benchmark test design, procedures, programs, and results are described in a comprehensive report. It's yours for the asking.

The BTI 8000 system is a modular supermini multiprocessor system that can be sized to fit your needs. The system can use up to eight 32-bit CPUs and 24 megabytes of main memory, but you can start with a single CPU system and build up to larger configurations when your needs grow.



As for reliability and service, they're an established BTI tradition. Over 3,000 BTI systems are currently supported by BTI in the U.S., Canada, and Europe.

Contact us for more information about the BTI 8000 32-bit supermini and your copy of "Benchmark '85."

BTI8000 32-bit Multiprocessor System

BTI Computer Systems, 870 West Maude Ave., Sunnyvale, California 94086 (408) 733-1122
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(News continued from page 16)

1-2-3 users, says Jack Grushcow, president of Consumers Software.

Docucalc by Micro Decision Systems (Pittsburgh, PA), a product developed two years ago for users of Visicalc, from Visicorp, San Jose, CA—it has a Visicalc menu structure—does the same audit-trailing job. Both The Spreadsheet Auditor and Docucalc print out the spreadsheet model with its formulas and other specs, such as range names and column-width settings. The hard copy lets the user scan for errors and allows other users to examine the model's logic and make changes. Jeff LeBlond, editor of *Absolute Reference*, a newsletter for 1-2-3 users, rates each program highly, giving a slight edge to The Spreadsheet Auditor "because it's a little easier to use."

At \$99, The Spreadsheet Auditor runs with 1-2-3, Visicalc, and Supercalc, from Membership Services Inc. Consumers Software plans the introduction of a new version of the product this spring that will provide "real audit trails," macro-extraction capability, and flow-chart printing. This newer version is priced at \$149. It will also run with Lotus' Symphony and is designed for use with the IBM Personal Computer and PC XT, and with the Apple II Plus and IIe.

At \$95, Docucalc runs with 1-2-3, Symphony, Visicalc, and Supercalc, and—*sacre bleu!*—is available in French as well as English. It has been designed for most MS-DOS machines, including the IBM PC and PC XT, the Wang PC, and the DEC Rainbow. These audit-trailing software packages have been a big hit with financial institutions. Their limitation, of course, is that they don't solve problems. But they do make it easier for users to find them.

Are these packages truly useful? The tale is told of one executive who fumbled a multi-million dollar account because a formula in his forecasting model erroneously assigned a minus sign where there should have been a plus sign.

—Anita Micossi

TIPS FOR DEALING WITH SALESPEOPLE

Fierce competition among vendors for the MIS/dp purchasing dollar has brought hordes of salespersons to your office door. How do you deal with them? Vincent Caracio, who runs two companies in Richardson, TX—Harvard Co., which teaches communications skills to MIS/dp executives and Sales Techniques Inc., which instructs hi-tech salespersons in how to sell to MIS/dp—has a few pointers.

Be patient. Haste will ensure a wasteful decision. Caracio says, "The longer a potential customer holds off, the greater the chance that the salesperson will make support and price concessions."

Create a buying committee. Such committees frustrate salespersons who can't read its intentions because it consists of a number of people. "The salesperson doesn't know how to foil a committee's collective reasoning and, desperate to do business, the first thing he or she will do is start making sales and support concessions," Caracio says.

Avoid salespersons who try hurry-up



Vincent Caracio says: Check the salesperson's vapor index.

tactics. For example, Caracio suggests rejecting a salesperson who tells you that there is a nine-month wait for a product, and if you delay the purchase, you won't be able to get it for 12 months.

Be wary of buying exclusively on price. Caracio notes the limited life expectancy of a significant number of vendors. Many times, just before its flame dies, a vendor will offer drastic price decreases to move its merchandise. When buying more than \$150,000 of equipment, MIS/dp executives should instruct their internal accounting departments to run a "very severe" check on the financial stability of the vendor. "You should tell the salesperson to provide his or her company's annual report and a 10K (a form filed by publicly held companies to the Securities and Exchange Commission)," Caracio says.

Ask the salesperson to supply a list of his or her company's clients. If the vendor's clients tell you they've noticed an increase in service-response time or a delay in supplying needed parts, that indicates you could have a problem with this vendor.

Ask what lawsuits are pending against the vendor. Specifically, find out if there are any lawsuits by customers who are using the system you are evaluating, Caracio says. This can be handled through your company's legal department by contacting the vendor's legal department.

When making large, important purchases, don't be afraid to get a commitment from the vendor's CEO. Caracio says he knew of one MIS/dp executive considering the purchase of a multi-million dollar office-automation system who insisted on meeting the CEO of the \$2 billion vendor organization. "When making a multi-million dollar decision that has an impact on everyone in the company, I don't think it's too much to ask to bring the vendor's

He retires tomorrow.
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a gold watch and
your source code.



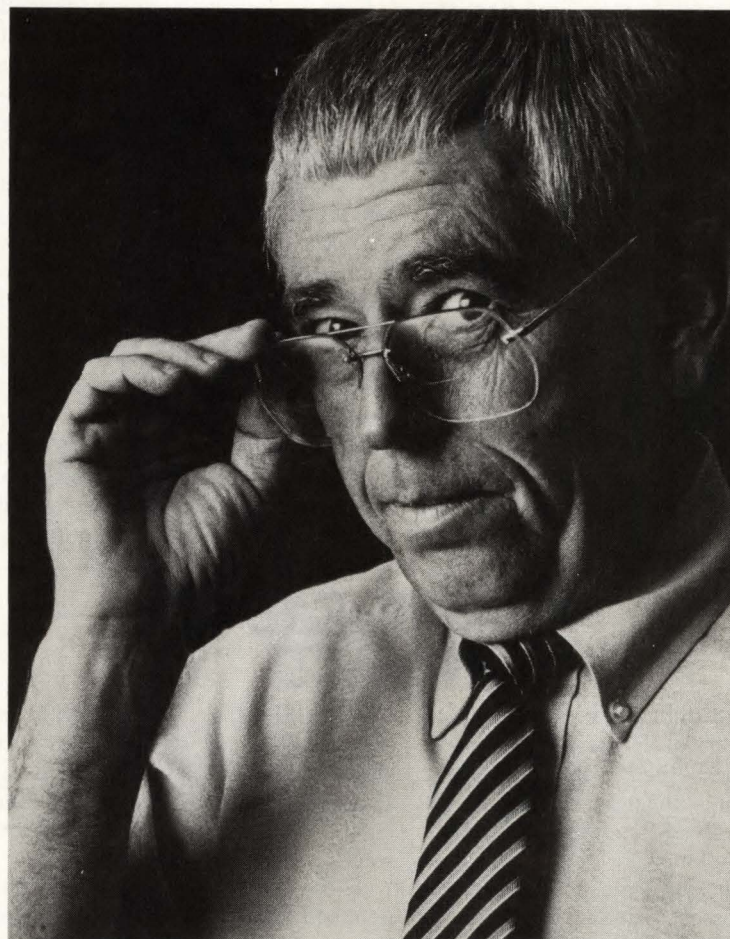
security software prevents crimes of unauthorized access against your company's data. Because TOP SECRET can never be fooled by a computer criminal posing as a loyal employee, you won't be either.

Most important, TOP SECRET can be implemented without interrupting your day-to-day operations. It's unique phased implementation lets you secure your critical resources immediately, then proceed at your own pace to secure all your corporate resources.

By using the standard security interface already built into MVS, TOP SECRET installs quickly, easily and with absolutely no programmer modifications to your operating system. When it comes to our installation time of less than half an hour, there's no other data security software that comes close.

And to simplify even further, TOP SECRET makes security administration easy enough for one person to take total charge of the job.

With TOP SECRET, you get the most comprehensive data security available for CICS, IMS, IDMS, TSO, and



other MVS subsystems, plus compatibility across a wide range of software products.

Our TOP SECRET Consulting Group is available to help you design a complete data security program for your company's needs, and assist you in all phases of planning and implementing TOP SECRET successfully.

So before that nice old gentleman down the hall makes his move, make

yours. Call 800-237-2057 (in Florida, (813) 263-5011) for your free 30-day TOP SECRET trial today. And, to help you plan for a successful data security implementation, write CGA or call John Mulligan at (201) 946-8900 for your free copy of our popular booklet, *Security Software: Considerations for Success*.

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president in on it. With the competition so fierce, the CEO can be a major marketing asset. For example, John Sculley, president of Apple Computer Inc., is known to get involved in committing the resources of his organization to its clients," Caracio says.

Caracio says the most important attribute to look for in a salesperson is integrity. To find it, give the salesperson a small chore to see if he or she follows through. For instance, ask the salesperson to provide a written summary of what transpired during the sales call. "If the salesperson fails to perform on something minor, assume that he or she will fail to perform on something more significant," Caracio says.

MIS/dp executives want a salesperson who won't lie and who will give a fair over-all presentation—telling them the bad as well as the good things, Caracio says. A good barometer of this is a salesperson's "vapor index"—the tendency to promise future, important product enhancements

that may or may not evolve—and how honest he or she is when a competitor comes out with a better product. MIS/dp executives are also wary of a salesperson who knocks a competitor's product as inessential when it's important, Caracio says.

Caracio says his company recently conducted a survey in which a majority of the 400 MIS/dp executives interviewed thought the salespersons they dealt with didn't understand the buyer-company, the industry in general, and the vendor's competition. Salespersons were thought to be above average only concerning the vendor's own product line, Caracio says. He suggests that MIS/dp executives provide salespersons with annual reports and other pertinent information about their organizations, and instruct the salespersons to read the material before trying to sell their product. Caracio says, "Vendor companies invest heavily in product knowledge but spend little time emphasizing integrity."

to involve personnel departments in job design, work satisfaction, and performance monitoring; and inadequate communication to end users on VDT health-and-safety issues.

The study concluded that managers will play a critical role in ensuring that the office of the future doesn't become a remade factory of the past. Managers will be the key decision-makers about how automated office equipment is used and how it will affect the up to 50 million employees who will be using VDTs by the end of the decade.

Rodney Becker, vice president of management systems at Control Data Corp., Minneapolis, commented that employees at all levels—from clerical to managerial—will be affected by OA, and that organizations will need to change their approach to "job design." "Historically, job design meant concentrating on productivity," Becker said. "The belief was that productivity is achieved by making all jobs as simple and routine as possible." Becker said managers must break from this approach and design jobs based on content, personal achievement, and task variety. When jobs are designed to facilitate feelings of personal satisfaction, the outcome is a self-perpetuating success cycle.

"You can't shove OA down employees' throats," said Susan Dray, manager of human-technology impacts at Honeywell Inc., Minneapolis. Employees shouldn't be expected to adapt themselves to new computer systems, but rather new computer systems should be modified to suit the workers. Dray said employees at Honeywell have the right to basic information about the health-and-safety issues regarding VDT equipment, their workstations, and how their jobs will be changed as a result of OA.

Women in low-paying clerical jobs are the first to feel the effects of OA, explained Lenora Cole Alexander of the Women's Bureau at the U.S. Department of Labor. Of the 50 million women in the labor force, Alexander

(News continued on page 24)

VDT USERS IGNORED

Three-quarters of the video-display-terminal (VDT) users in a recent survey believe their organizations are ignoring their concerns, according to The Educational Fund, a nonprofit research foundation in New York. The organization surveyed VDT users in 110 businesses, including government and nonprofit organizations. Less than 10 percent of the users surveyed believe their organizations provide ergonomically satisfactory work conditions. The 1,100 VDT users interviewed define a satisfactory ergonomic environment as one that features flexible workstations with adjustable chairs and desks, and adequate protection from screen glare.

The study involved visits to major insurance, manufacturing, financial-services, high-technology, and retailing corporations. On-site interviews were conducted with employees who use

VDTs (900 of them women); 650 managers and executives; 55 information-systems directors in business and government; and leaders of 40 labor unions active on office health-and-safety issues.

These and other findings were announced during the first National Conference on People, Organizations, and Office Technology, held recently in Washington. For example, only one-third of the organizations give employees access to all information gathered via computerized work-monitoring by management and tell employees how that information will be used. Only one-third involve employees in the planning of production standards and work design. Other problems included: insufficient interdepartmental coordination on the part of top management; inadequate resources allocated for orienting and training new users; failure

IBM® Software Notes

News for the DP professional



BancOhio is constantly improving its products and services, with help from IBM's DB2.

Managers at BancOhio Are Banking on DB2

"DATABASE 2 (DB2) is an efficient vehicle for providing our top management with financial and analytic details," says Jack Kiger, Vice President and Director of Data Processing at BancOhio in Columbus, Ohio.

The bank, which has more than 250 branches throughout the state, has been testing DB2, IBM's full-function relational data base system, for a year and a half. "In that time, we did a 22 man-year MIS project in only 24 man-months," reports Kiger.

The key to this outstanding productivity is DB2's powerful Structured Query Language (SQL), which makes corporate data available—simply, economically and with full data security and control.

Through its Query Management Facility (QMF), DB2 provides end users with a friendly interface to SQL, including a full set of helps

and prompts. With QMF, users can query the data base directly, ask the system to generate reports or create their (continued next page)

A NOTE TO THE READER

To keep you informed of software developments at IBM, we will publish *Software Notes* on a regular basis.

Software Notes will bring you news of programs that help make systems and people more productive. It will feature articles on high-productivity packages such as DB2, IBM's full-function relational data base system, and application development tools such as the Cross System Product Set. And it will tell you about users' experiences with IBM software.

We'll also let you know about new software courses and other IBM offerings that can help you get the most from your DP resources.

The Cross System Product Set Aids Programmers at Corning

Through an innovation in application development, Corning Glass Works, Corning, New York, has eliminated most of the detail work involved in conventional programming.

The innovation is the Cross System Product Set from IBM.

With this program, a developer can complete every phase of a project interactively at a terminal. This includes defining and validating screens, files and logic; testing and debugging a program; running trial executions and putting the application into production.

The Cross System Product Set is especially effective as a development facility for applications designed to run under CICS, or in distributed 4300 and 8100 systems.

According to Steve Grace, Supervisor of Application Development Technology at Corning, "The program's interactive nature and

extensive debugging aids lend themselves to developing applications quickly and accurately."

What's more, the Cross System Product Set requires fewer special CICS skills on the part of the programmer.

Such features as trial screens and quick prototype executions improve communication between DP personnel and end users.

The program runs on all 4300 and 30XX series operating systems and on the IBM 8100 with DPPX/System Program. It's portable, so that an application developed on one supported system can be run on another.

Mr. Grace sums up the experience with the Cross System Product Set at Corning Glass like this: "As a result of its many benefits, we've been able to satisfy user requirements faster and more economically." ■

DB2 (continued)

own unplanned reports.

But DB2 is much more than an end-user product.

It's a full-function relational system that lets professional programmers develop complex applications with greatly improved productivity. It provides them with the facilities they need for backup, recovery, restart and security. These functions can be incorporated in an application by simple statements and need little explicit programming.

With these security provisions, transactions are well protected. This means that DB2 can handle online applications while maintaining the integrity of the corporate data resource.

Thus DB2 can meet the full range of needs. It can handle production work as well as end-user query and reporting services.

"Our experience with DB2 has been beneficial," Kiger adds. "From the standpoint of stability and ease of use, it's the best product IBM has delivered to us." ■

'Usability' Labs Help Make IBM Software Easy to Use

It's one thing to create software that works. It can be quite another to make that software easy for users to learn and operate, and to support it with documentation that's easy to follow.

Dr. Lewis Branscomb, IBM's chief scientist, puts it this way: "It shouldn't be necessary to read a 300-page book of instructions before using a computer, any more than it is before driving a new automobile."

That's why, prior to release, IBM evaluates many pieces of software for "usability." We've taken a scientific approach to this process in Usability Laboratories located in cities across the United States.

The evaluators are people who have not had software experience.

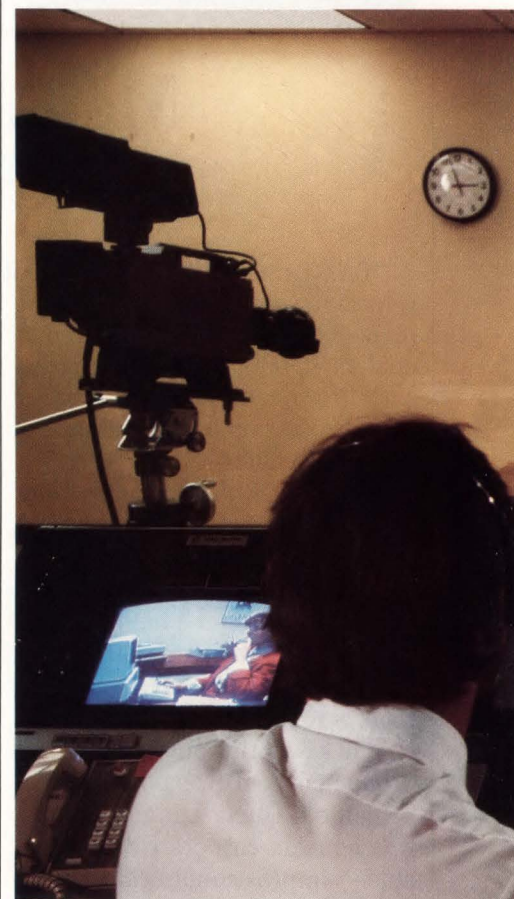
In each lab, we've set up a com-

plete office environment, attractively decorated and comfortably furnished. On each desk is an IBM workstation which supports the software to be evaluated.

Here, evaluators at the workstations are handed the instruction manuals and assigned the task of putting a piece of software through its paces. As each evaluator works, he or she is observed and recorded. Every interaction on the workstation screen is recorded too.

Through this feedback we've learned a lot about our software—and our documentation. We've also made software, such as the IBM Business Management Series, a lot simpler to use. ■

Evaluator (rear) works with a piece of IBM software. Observers (foreground) note her efforts and record them for study.



RACF Helps Protect Data At United Student Aid Funds

"We are pleased with the enhancements of the IBM Resource Access Control Facility (RACF)," says Dan Roddy, Manager of Data Center Support for United Student Aid Funds, Indianapolis, Indiana, a nonprofit corporation which guarantees and services student loans.

"In particular, a new system of resource definition in RACF, called 'generic profile checking,' makes administration much simpler. Most data sets can be protected using only the first-level qualifier," Roddy adds.

Profile checking is just one of the many features that make RACF easy to implement and maintain. Flexibility of design and structure is another. In addition, with RACF you need not modify your operating system or system-level software such as CICS, IMS, DB2 or HSM.

RACF uses list orientation, a

simple technique for access control. With little effort, you can establish ownership and control over your resources. You can also designate who else may have access—and how much access.

RACF has built-in features which make it easy to demonstrate that the controls have worked.

Positive control, excellent security, simple maintenance and administration: These are the benefits that make RACF a widely accepted access control product. And RACF is designed to work closely with such IBM operating systems as MVS and MVS/XA. ■

VS COBOL II will be available in the first quarter of 1985.

This major new COBOL product will let you compile programs to run above the 16-megabyte line in XA systems. And that includes CICS or IMS transactions.

IBM Offers Courses On IS Management

If you're interested in learning about management issues related to information systems, or in getting advice on training, or in just keeping current yourself, you'll be interested in the offerings of IBM's Information Systems Management Institute.

The institute offers over 38 courses in six information systems areas: Information Systems Planning, Applications Development, Service Management, Information Asset Protection, End User and Personal Computing, and Personal Development and Management.

The courses seek to help users increase their productivity in data processing. Lasting from two to five days, the courses are offered in over 25 cities and are taught by staff instructors who combine years of teaching with practical knowledge.

To order a free catalog of courses, just return the coupon. ■



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NEWS & COMMENT

(News continued from page 20)

said, "The number-one occupation is clerical work on VDT equipment. Women want more control over their jobs, and more say in the decisions affecting the workplace. Preliminary findings from a study by the Institute for Economic Analysis at New York

University suggests that there will be a net loss of 5 million clericals due to OA by the year 2000," Alexander said.

The results of the Educational Fund's study are published in *The Changing Workplace: A Guide to Managing the People, Organizational, and Regulatory Aspects of Office Technolo-*

gy, written by Dr. Alan F. Westin, Heather Schweder, Michael Baker, and Sheila Lehman. The 15-chapter guide provides analyses of all aspects of OA. It's priced at \$125 and is available through Knowledge Industry Publications, White Plains, NY. Call (914) 328-9157 for information.

SOME STATES TAX, OTHERS ARE LAX

Twenty-two states tax off-the-shelf software, but exempt software tailored to customers' specifications. Eighteen states tax both off-the-shelf and custom software programs; five states tax neither. The remaining five states—Alaska, Delaware, Montana, New Hampshire, and Oregon—don't impose sales tax on any type of goods.

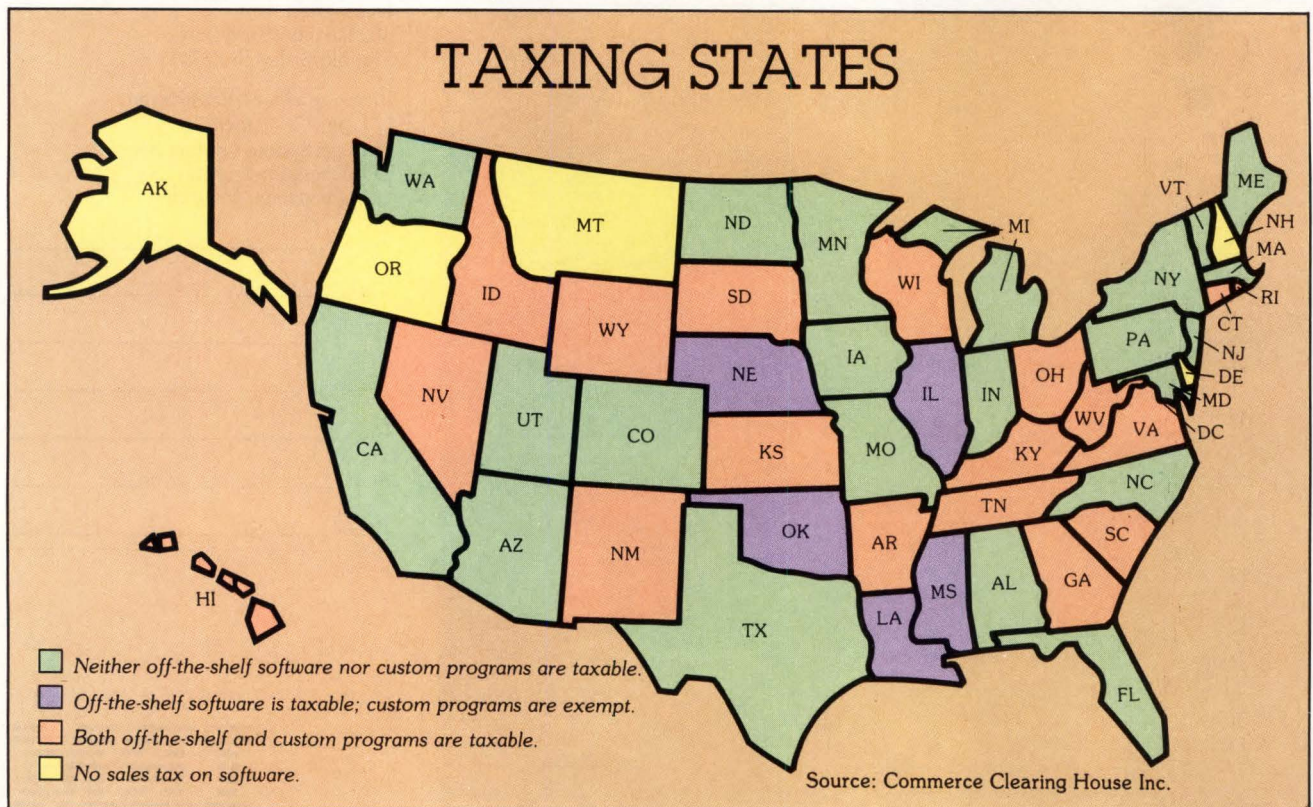
According to Mort J. Sullivan at Commerce Clearing House Inc., a Chi-

cago-based legal publisher, the disparity in software-sales taxation reflects divergent views on whether software is tangible or intangible. Most states impose sales tax on transfers of tangible items. Software is not easily classified since the value of the information in the software usually exceeds the value of the tapes and disks used to transfer that information.

States that tax software classify programs as tangible personal property.

States that don't tax software classify programs as intangible property, like services, and view the disk or tape as merely incidental to the value of the information the programs contain, Sullivan says.

Many states divide software into two types—off-the-shelf and custom—although the specific definitions vary from state to state, Sullivan says. Off-the-shelf software consists of prewritten programs that are pur-



Lear Siegler's New ADM 220

DEC VT 220™ Compatibility.

More performance with High Touch™ Style.

DEC compatibility. Ergonomic styling. Standard features that include advanced editing, 15 programmable function keys, DEC VT220 keyboard layout, and user-friendly set-up. All these—and more—are combined in Lear Siegler's ADM 220 video display terminal.

The ADM 220 is engineered for use with Digital Equipment Corporation and ANSI X3.64 compatible systems. It is compatible with the DEC VT220, as well as the VT100™ and VT52™. Add Lear Siegler's superior styling and ergonomics and you have a VDT that offers maximum operator comfort and efficiency.

Lear Siegler's High Touch style includes a full tilt and swivel monitor that stops positively in any position. The low-profile, DIN standard keyboard includes a built-in tilt adjustment. Set-up is easy with parameter menus displayed in English, French or German.

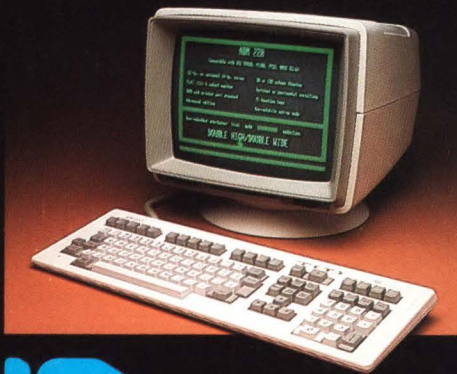
The ADM 220 provides four non-embedded visual attributes (blink, bold, underline and reverse video), 80 or 132 column x 24 line display (plus 25th status line), split screen, double high/double wide line attributes, and vertical or horizontal scrolling.

The ADM 220's unique 3-level function keys give you 15 fixed functions and 15 programmable functions. An

added feature (not available on DEC's VT220) is the addition of 15 programmable, non-volatile functions.

A 12-inch green or amber screen is standard and 14-inch displays are optionally available.

For complete information call your regional sales office: Anaheim, 714/778-3500; Atlanta, 404/971-9781; Boston, 617/456-8228; Chicago, 312/310-1250; Houston, 713/780-2585; New York, 516/549-6941; Philadelphia, 215/245-1520; San Francisco, 415/375-1318. Or call 800/532-7373 for a distributor near you.



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CIRCLE 15

chased and used in a customer's computer without modification. Custom software is either off-the-shelf software modified to meet a particular customer's needs or individualized programs.

If you work in a state that taxes software and wonder whether it's possible to save money by purchasing software in a state that doesn't tax it, you can stop wondering. Every state that has a sales tax also has a use tax mandating

that all software purchased in a state without a sales tax must be taxed at the buyers' home-state tax rate, according to Samuel Frumer, a tax professor at Indiana University, Bloomington. For corporations that buy large amounts of software in a tax-exempt state for use in a state that has a sales tax, Frumer says the risk of being apprehended and fined for tax evasion is too great.

ference between the book and the computer?"

Despite claims of software developers like Levy, many managers are skeptical of the value of subliminal-message or hypno-therapeutic software. "My feeling is that for subliminal messages to work, you'd have to have active and willing participants," says George Alvarez-Correa, manager of systems development in the pension-investment division at The World Bank, Washington. "You would have to be awfully naive not to know that a subliminal message is blinking at you all day long," says Alvarez-Correa, who says he has tried using a subliminal-message program. "The idea is good, but I wonder if a package like this can work at all."

—Theresa Conlon

SUGGESTIVE SOFTWARE

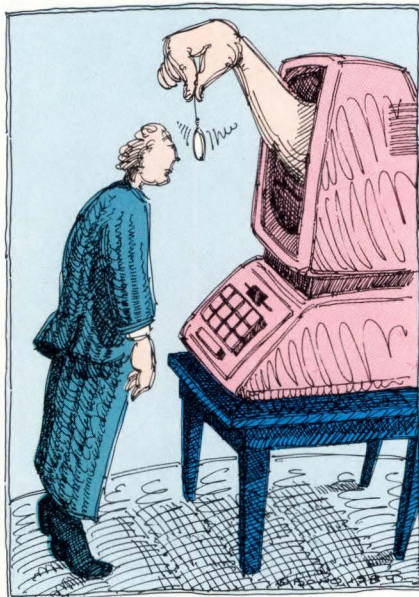


Illustration by Peter Bono

package. Any message can be flashed, from a general, positive suggestion to make employees feel good about their jobs to a more terse "work faster."

Another program, Cope, is classified as a hypno-therapy package by its creators, psychiatrists Ronald Levy and Sidney Rosen. Unlike a subliminal package, with which messages are flashed at employees while they work, employees using Cope take time out from their work to go through the steps of the program. Soothing, supportive sentences serve as hypnotic suggestions to put workers in a better frame of mind, claim the package's creators.

Can workers become more productive through hypnosis? Levy says a test run of a version of Cope yielded positive results. In the test run, employees were given hypnotic suggestions that made them feel as if their workdays were shorter, Levy says. The end result was reduced absenteeism, claims Levy. "The plant manager was pleased, and the workers experienced fewer problems with their superiors," he says.

To critics who argue that a program like Cope is unethical because it is an attempt at mind control, Levy says, "Suppose you give people a book to read and that book persuades them that they're happy at their jobs. Should that book be banned because it attempts mind control? What is the dif-

Improving employee performance through subliminal messages may soon be listed as one of the many uses of microcomputers in corporate offices. Several software houses now boast programs they claim will increase worker productivity by helping workers feel better about their jobs.

One such package is Subliminal Suggestion and Self-Hypnosis, from Greentree Publishers of Camerillo, CA. The program can be used to flash messages on employees' video-display terminals at regular intervals, according to Michael Anderson, author of a book that accompanies the software

THIRD-PARTY LINKS

New ways to achieve communication between minicomputers made by Digital Equipment Corp. (DEC), Maynard, MA, and micros made by IBM were shown by vendors at Dexpo West 84, the DEC-compatible-industry's trade show, recently held in Anaheim, CA, and Decus, the DEC-users show. Fel Computing (East Dover, VT) announced its second product, Mobius, a micro-to-DEC minicomputer link. Mobius consists of two software modules, one for the micro, and the other for the DEC host. More than one micro can be hooked to a DEC host with Mobius.

Fel claims that with Mobius, host files appear to the user as if they were files on the micro's own disk drive, and host printers function like the micro's own printer. The Fel link is also one of the most inexpensive; the host module for VAX or DEC System/10 and /20 ranges from \$3,500 for five users to \$17,000 for 50 users. For micros, the software module is priced between \$150 and \$250. The micro version is

Never Again Choose Between Price and Quality.

The competition says you must sacrifice one for the other. What they're really saying is they can't give you both. Introducing the TeleVideo® 921. Proof that low price and high quality do go together.

But don't let its low price fool you. The 921 is years ahead with features taken from our most expensive terminals. Like selectable embedded or non-embedded field attributes. 32 nonvolatile function keys. 6 fast edit keys. And something we're famous for: in depth support. Including technical assistance, service training and award winning documentation.

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The TeleVideo 921



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currently available for CP/M-based and MS-DOS-based micros and the IBM Personal Computer. For more information, call (802) 348-7171.

Xyplex Inc., Concord, MA, a hardware vendor for local-area networks, promotes the Xyplex Host Interface Unit (which connects to the VAX) and the XP-IPC (a peripheral controller board that fits in an IBM PC), with the claim that the products allow the PC to emulate a DEC interactive terminal. The vendor also says that file transfers are possible between the PC and a DEC host, which means that spreadsheets, such as Lotus 1-2-3, can share information with the host. The Host Interface Unit costs \$7,700; another \$960 buys the XP-IPC. For more information, call (617) 371-1400.

Ross Systems Inc., Palo Alto, CA, has created Maps/Microlink, which links IBM PC-based spreadsheets to Ross Systems' own VAX-based accounting applications. For \$10,000, buyers can get the VAX-resident software and 10 copies of the necessary PC software. For more information, phone (415) 856-1100.

Data Processing Design Inc., Anaheim, CA, introduced Wordlink, which allows IBM PCs running Wordstar or Multimate word-processing software to gain access to VAX minicomputers. Wordlink is actually two packages: one for a VAX that costs \$1,300; and another for each micro, costing \$200 apiece. More information about the product, which is scheduled to be shipped in April, can be obtained by dialing (714) 970-1515.

Linkware Corp. in Waltham, MA, promotes its Linkware software as able to convert DEC's VMS operating system files into standard IBM PC formats and vice-versa. Lotus 1-2-3 users, for instance, can access and store data on the host, as well as transfer it to their PCs. Linkware also allows a PC to emulate a DEC terminal. The price for the VAX software is \$12,000. PC software is \$350 per PC, or less if many copies are ordered. For more information, call (617) 894-9330.

For IBM-mainframe-to-DEC communications, a comprehensive and expensive product was shown by Interlink Computer Sciences Inc., Fremont, CA. Called the IBMmvs/DECnet Gateway, it combines hardware and software to provide an interactive link between an IBM mainframe running the MVS operating system and a VAX, PDP-11, or System/10 or /20 linked to DECnet. Interlink claims DEC users can access IBM programs and move information to and from IBM files with DEC commands. An IBM user, keying in standard IBM commands, can do the same on the DEC equipment. In addition, remote batch jobs can be submitted to and from the IBM mainframe, and the output routed to the DEC system. IBMmvs/DECnet Gateway is priced between \$85,000 and \$115,000. Call

(415) 792-6212 for information.

A much less expensive, but more limited, product comes from Software Results Corp., in Columbus, OH. The product is Comboard, and it allows a DEC VAX or PDP-11 to emulate an IBM remote-job-entry workstation, enabling the DEC user to process batch jobs on the mainframe. The product consists of a hardware module that fits into a peripheral-controller slot in the DEC Unibus. One type of Comboard, the Comboard/SNA, allows the DEC user interactive communication with IBM mainframes running System Network Architecture (SNA) applications. According to the vendor, users can set access to SNA programs without worrying about SNA protocols. The Comboard starts at \$13,900. Call (614) 267-2203 for information.

EXEC-TECHIE GAP PROBED

One session of the recently held Computer Measurement Group (CMG) Conference in San Francisco can be summed up by the well-known line, "What we have here is a failure to communicate."

CMG held the session, entitled "Executive Views of Capacity Management," to promote understanding between capacity planners who write reports on dp equipment needs and MIS/dp executives who make recommendations to top management on equipment purchases. Each side aired its gripes about the "understanding gap" that exists between them. MIS/dp managers complained that reports from capacity planners are often too technical to be understood. Capacity planners argued that the reluctance of MIS/dp managers to reveal information about future plans and projects prevented realistic assessments of computing needs.

Thomas McKernan, assistant vice president of the Automobile Club of Southern California and one of the

three MIS/dp executives on the session panel, conceded that managers placed capacity planners at a disadvantage by not giving them all available planning information, but added that other business considerations often outweigh the need to give capacity planners such sensitive information.

Panelist Jim Dalton, manager of Mobil Oil Corp.'s Northeast Computer Center, supported McKernan by pointing out that sometimes "everyone was in the dark," meaning that only a few members of top management might know a corporation's plans.

A skeptical capacity planner from a Midwestern phone company dismissed the executives' contention that senior management wanted less technical jargon from planners. "They say they want plain English when we present recommendations to them," he groaned, "but what they really want is packaging, like more graphics."

(News continued on page 32)

INTRODUCING DECISION DATA'S DUAL-PURPOSE COMPUTING WORK STATION



THE NEWEST CRT TERMINAL FOR THE IBM/34/36/38 IS A PERSONAL COMPUTER, TOO.

One machine. Two separate functions. A multi-feature work station for easy access to your System/34/36 or /38. And your own personal computer which runs programs from the IBM Personal Computer software library.

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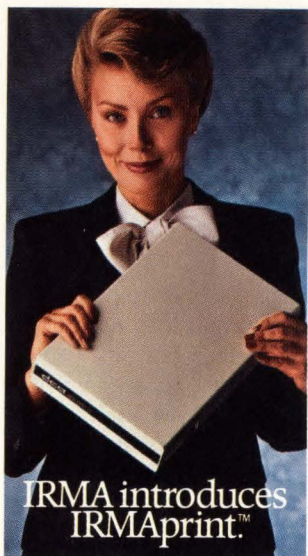
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IRMAprint isn't a printer. It's a printer emulator. In technical terms, it hoodwinks the IBM mainframe into thinking that whatever printer attached to it is a 3287.

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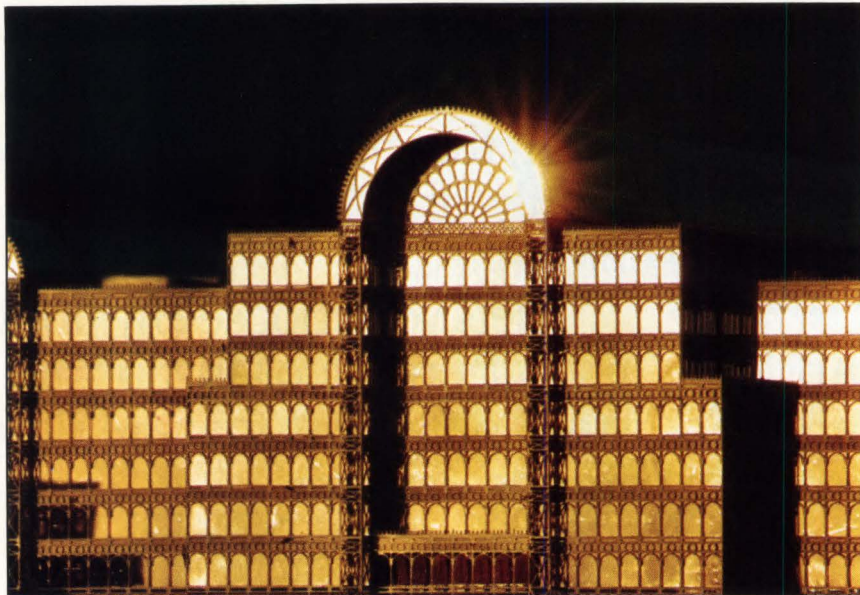
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NEWS & COMMENT

(News continued from page 28)

HAVE MART, WILL TRAVEL?



The real test for Dallas' Infomart, shown in this model, is whether buyers will bite.

The publicity for proposed computer marts glows with visions of hi-tech tomorrowlands where buyers can view many vendors' equipment in one place. But behind the glitter lurk two major questions: Will the proposed computer marts become realities? Will they offer enough to warrant buyers' attendance?

Several highly touted computer-mart contenders have been tripped up by financing problems, vendor resistance, computer merchandisers' lack of experience in mart merchandising, and real-estate developers' unfamiliarity with the volatile computer industry. Developers of Boston's Boscom, for example, have found that some large manufacturers based near Beantown see no need to lease space in Boscom when major corporate customers can be wooed at headquarters.

Yet, none of these obstacles seems to be holding back the promoters of several computer marts scheduled for launching within the next two years: Infomart, slated to open in Dallas this month; San Francisco's Datamart,

which is supposed to open this June; Inforum, Atlanta, scheduled for late 1986; and Boscom, laboring toward a many-months' postponed debut next December.

Infomart will be the first mart to open its doors—if all goes according to plan—and should be operational very soon. The brainchild of Dallas merchandising-mart developer Trammell Crow, Infomart has managed to clear many of the hurdles that have bogged other ventures. With Crow's \$1.75 billion empire and 30 years of mart experience, failure will not be for want of capital or marketing savvy. And with commitments from IBM, AT&T, Xerox, Kodak, Tandy, and the Lotus Development Corp., Infomart seems to have many of the major players on its side.

In addition to creating a showcase for state-of-the-art, hi-tech products, Infomart has announced plans to sponsor conferences for markets, such as the financial and manufacturing sectors. And it will offer educational seminars, a resource library, conference rooms,

and needs-analysis service to help customers determine what they need and how to buy within their budgets. Crow is confident that he will succeed where others have failed. A New York mart, part of that city's 42nd Street renewal project, is already under way, and the Crow team is scouting sites in Los Angeles, West Germany, and France.

Still, there are kinks to iron out in this ambitious operation. For example, the promoters of Megatech, a trade show scheduled to occupy all of Infomart's eight stories and 1.5 million square feet of space, recently announced that its March 1985 opening date has been rolled back a year to March 1986. A press release notes that the show's timing conflicts with other previously scheduled shows. But skeptics wonder if putting an untried show in an untested building isn't pushing the odds a bit too hard, especially with existing computer shows seeing declines in attendance.

The bigger question, however, is the viability of computer marts. Will corporate buyers flock to centralized marketplaces? The promoters of these marts argue that the other ways MIS/dp decision-makers shop for equipment are unsatisfactory. Retail dealers can't always present a broad enough range of products for evaluation. And listening to the sales presentations of many corporate-account sales reps is a time-consuming way to learn about new computer wares.

Simplifying and condensing this process is a major goal of proposed marts. Qualified buyers can, at their own convenience, view in one place the full range of computer equipment. They can make side-by-side comparisons without having to endure the frantic atmosphere of the trade shows. And, they can get help from on-site consultants. Joe Feringa, vice president of MIS/dp for the California Canadian Bank in San Francisco, says, "It sounds like a good way to get a comprehensive view of the market." Other corporate buyers may agree with Feringa, but only time will tell.

IBM PC USERS' GROUP GOES NATIONAL

IBM mainframe customers who want to share experiences with similar users can join Guide and Share groups, but IBM Personal Computer users have had no such groups. Now, a Los Angeles film director who started his own group for IBM PC owners in southern California says he has decided to open up his organization, the IBM Users' Group, for national membership.

Neil Zachary, a film director who also owns an IBM PC, announced at Comdex Fall in Las Vegas that his users' group would open its doors to corporate users around the country. When the group was small, Zachary ran it from his home. But after a recent arti-

cle about the group in a trade journal, he received about 400 inquiries about the group's programs, Zachary says. In fact, membership is growing so rapidly that Zachary is now moving his office out of his house to a business location.

About 100 of the calls were from Fortune 1,000 companies inquiring about how to set up corporate chapters. Corporations want their micro users to learn more about the spectrum of information personal-computer users outside the company can provide, Zachary says. Both MIS/dp executives and end users were among those who called.

Zachary emphasizes that the pur-

pose of the users' group is to make members "computer comfortable." He encourages users at all levels to join—from technicians to novices—and points out that the group is interested "in even those who haven't bought an IBM PC yet, but are thinking about it."

For \$25 per year, members receive the monthly user-group newsletter, containing helpful information from other users, Zachary says. The organization also offers hour-long videotaped presentations by vendors' representatives, such as IBM and software houses Digital Research and Ashton-Tate. Zachary says he limits vendors' sales pitches to five minutes. For more information, call (213) 937-1314.

TELECOMM EXECS AREN'T CHEAP

To lure a top-notch telecommunications manager into an organization, be prepared to pay a salary in the \$100,000 range, according to one executive recruiter. Corporations are paying big salaries to telecommunications managers because they realize that a competent telecomm executive can significantly reduce expenses, according to John L. Sullivan Jr., a partner in Korn/Ferry International, a New York-based executive recruiter.

Speaking to California's Little-Hoover Commission, which investigates that state's telecommunications needs, Sullivan noted that superior telecommunications managers "are in short supply and are generally concentrated within a narrow set of specific industries." He suggested that organizations looking for such an executive should focus on airlines, major banks, computer companies, large hotel chains, and other organizations that have discovered the value of telecommunications in reducing operating costs or increasing market share.

The common carriers also have good telecommunications talent, Sullivan said, but he warned against recruiting such managers. "Their background is often too narrow in focus and frequently lacks the broad perspective required, unless the individual is operating at a very high level within the organization," Sullivan said.

The demand for technical expertise in telecommunications has only recently caused a separate telecommunications-management discipline to develop. "Outstanding technicians rather than managers have been appointed telecommunications heads in the past, and the result has been that the business side of telecommunications management has often been poorly developed," Sullivan said.

The recruiter also remarked that telecom managers must cope with a complex array of options with new vendor offerings and combinations, forcing them to continually reevaluate systems. Sullivan recommended that organizations acquire well-rounded tel-

ecomunications executives who balance technical knowledge with management expertise. These executives must be able to communicate effectively within and outside the field, he said. "It's imperative that telecommunications managers have the capability to speak the language of business as well as the language of telecommunications."

UNIX FALTERING?

Is the Unix bandwagon slowing down? That's the implication of recent talks by several analysts at an "executive briefing" sponsored by International Data Corp., a Framingham, MA-based research firm. John Kiefer, vice president of Yates Ventures, Palo Alto, CA, which researches the Unix marketplace, said he sees steady growth but no dominance by Unix.

William Zachmann, vice president of

International Data Corp., does not see a "sweep" for Unix, but he said it will remain an important operating system. Zachmann said he anticipates competing operating systems on the Unix horizon. Another obstacle he sees to Unix' dominance is the variety of its product versions. Zachmann said that out of the 500,000 XT Personal Computers IBM has sold, only 2,400 were XT/Unix versions.

On the West Coast, David Ferris, chairman of the Ferrin Corp., a computer-based-consultancy in San Francisco, noted that although there's a need for a multi-tasking operating system for personal computers, Unix probably won't be the one. Most Unix backers say that Unix will most likely become the standard operating system for 32-bit supermicros and minicomputers, not personal computers. Ferris said that IBM's choice of operating systems for its standard personal computer is the key factor determining what operating system will be standard on other micros. "If IBM continues to back MS-DOS as its primary operating system, and MS-DOS is enhanced to gradually include a sophisticated degree of multi-tasking, that will probably be the end of Unix—at least as far as the PC world is concerned," Ferris said.

The slowing of the Unix bandwagon is not one of the reasons that Zachmann sees "rough sledding" ahead for AT&T and for its minicomputer offerings in particular. (Unix is a creation of AT&T's Bell Labs and is the operating system for AT&T's minis.) Kiefer, on the other hand, expects AT&T to become a real powerhouse among computer vendors. He called the communications outfit a "slumbering giant."

Slumbering is not how Ken Foster, an area vice president for AT&T Information Systems, described his employer. Frenzied would be a better description of the corporation's employees as they try to adjust to intense competition after 100 years as a regulated business. He emphasized AT&T's commitment to the future.

LOOK FOR THE ACR LABEL

Because of the crowd of vendors competing for users' attention—and money—even experienced purchasers of computing equipment get a little shell-shocked when buying new hardware or software. Now the Association of Computer Retailers (ACR) in Chelsea, MI, has devised a vendor-certification program designed to help users decide if a manufacturer is stable, reputable, and offers a genuine commitment to supporting its products.

The program works like this: Vendors apply to ACR for certification by filling out a detailed questionnaire that asks how long the manufacturer has been in business, whether it sells directly to large corporations, if it offers free technical support by phone, and if it grants free returns for defective parts. Vendors are also asked about the size of their customer base and shipping times.

After evaluation by ACR's four-member certification committee, a decision is made, ACR says. Once a ven-

dor is certified, retailers who are members of ACR are notified, and they advertise to their customers that the vendor has received the ACR seal of approval.

"This is a brand-new program," says Patrice Johnson, president of ACR. "We began it in November, so only two vendors have been certified, although four more have applied." The two certified vendors are Alpha Software of Burlington, MA and Tax-Calc of Irving, TX. Johnson points out that the certification committee has no strict rules for evaluating a vendor's application. "The committee didn't want rigid guidelines," she explains. "It wants to consider each vendor's application individually."

ACR itself is fairly new. Johnson founded the association in August 1983 as a cooperative for independent retailers of computers and software. Thus far, 115 retailers have joined, Johnson says. For more information, call (313) 475-1378.

AT&T TRUMPETS VOICE MAIL

Voice mail, barely heard from for years, may be ready to assert itself. Suppliers report greater interest in the service from users, and now AT&T, the major supplier of private automatic branch exchanges (PABXs), is adding an easy-to-use voice-mail option to the latest version of its flagship PABX, the System 85.

"Getting voice and data messages through will be tougher in the future because of the greater variety of devices that will be used," says an AT&T spokesman. Therefore, AT&T will offer "universal connectivity" with its largest voice-and-data PABX. Just about any device—even those supplied by other vendors—will be able to communicate with any other device

owned by customers that install System 85, AT&T claims.

Voice mail is only one of many new features of System 85, which will be able to handle up to 32,000 lines in a single system. It will also have a self-diagnosis feature that will minimize system downtime by immediately identifying components that need to be fixed or replaced.

Other new features of the System 85 include:

- More sophisticated automatic call routing, which will reduce long-distance costs.
- A remote-group feature, which permits small clusters of voice/data terminals to be located up to 100 miles from

(News continued on page 40)

Next to Harvard Total Project Manager, it's hard to take other project management software seriously.

When you've got important projects to manage and limited resources, you aren't exactly playing games.

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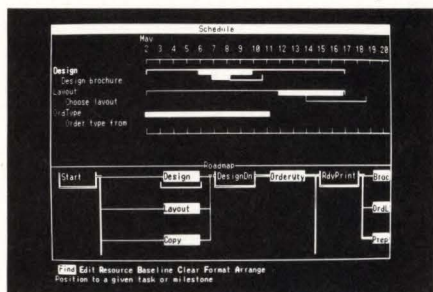
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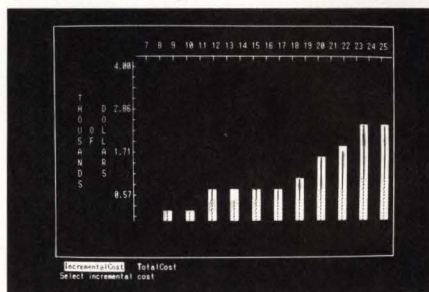
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The HP 3000 compu

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And our systems can change and grow as you do. When you're ready for upgrades and additions, you simply plug your existing programs into the new systems. No recompiling. No time and money wasted

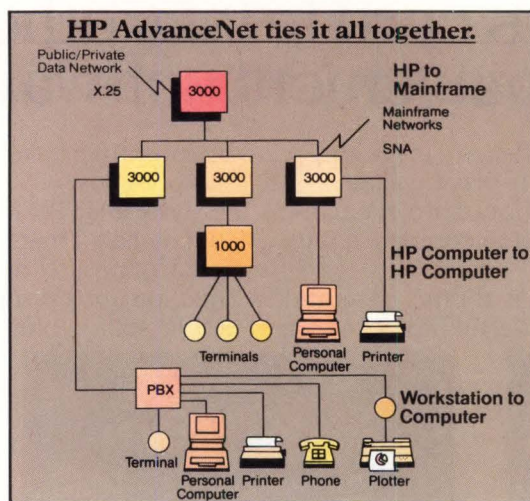
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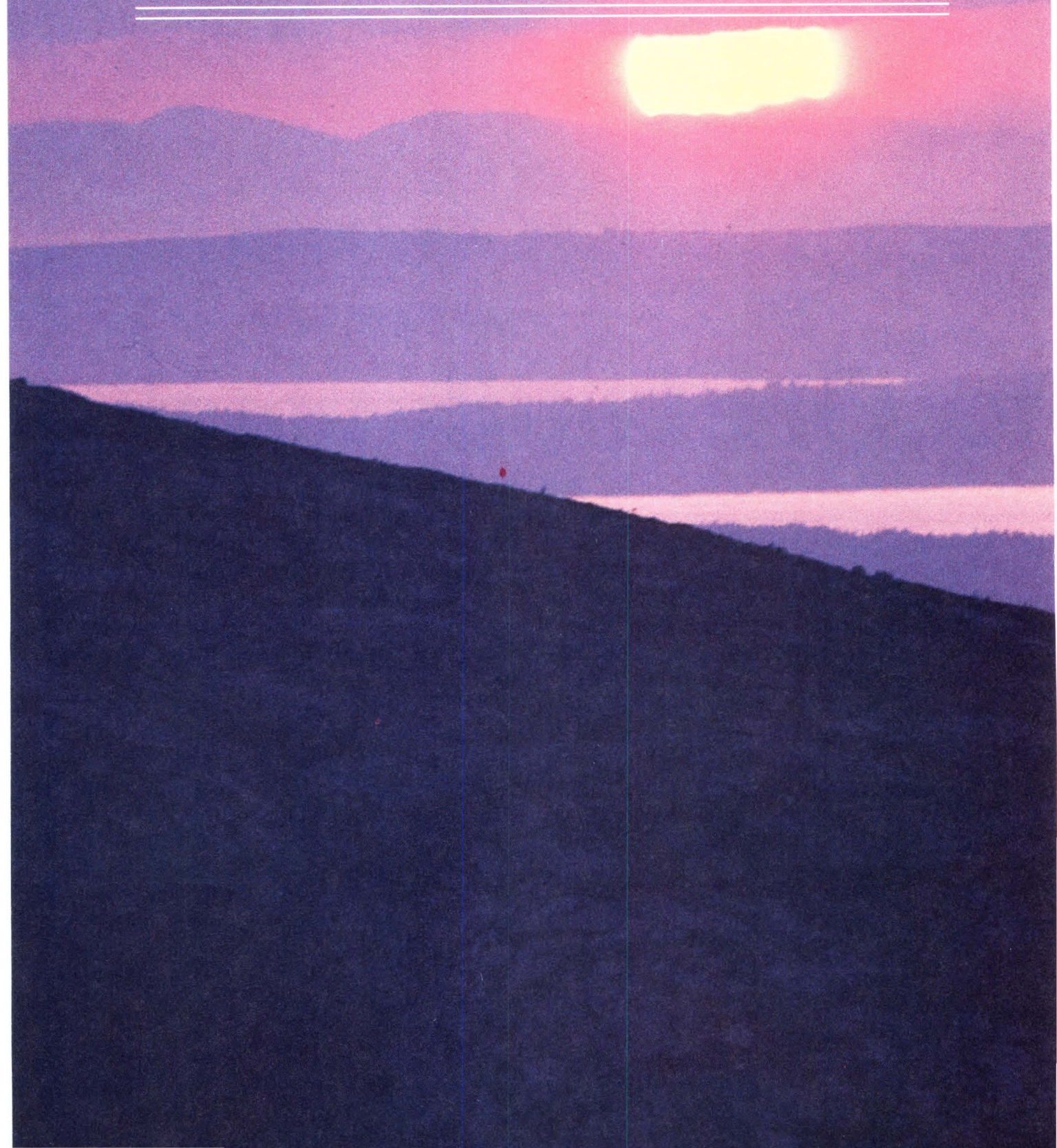
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Companies are discovering that when they combine these two products they get both an information management solution and an applications development solution. Instead of a backlogged data center, you get a smooth-running Information Center, in less time and for less money than you ever thought possible.

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(News continued from page 34)

the central switch with "total feature transparency."

- Centralized system management, which offers more control of a single system or a multi-processor system.

The voice-mail option will cost from \$140,000 to \$380,000, according to AT&T. A 16-port system with 200

hours of disk storage for messages will cost about \$200,000. Users will need Touch-Tone phones to use all the features of the voice-mail option. However, users with rotary-dial phones can still receive messages.

Some of the features of the enhanced PABX will be available in June of this year.

IBM SOFTWARE GLITCH

For nine years in his former job as MIS director for the York Division of the Borg-Warner Corp. in Chicago, consultant Raymond C. Florence Jr. had the normal love/hate relationship that typically exists between large dp shops and IBM. If there were bugs in the mainframe software bought from Big Blue, you fixed it and kept your mouth shut, he says.

But when Florence found a bug in an IBM off-the-shelf micro package and was told by an IBM representative that even though the bug was legitimate, IBM would do nothing—not even alert users to its existence—Florence decided to speak up. As a public service, Florence, who runs a consulting firm called Computer Ease Associates in York, PA, wrote to trade magazines explaining the bug in IBM Peachtree General Ledger software. "I just couldn't ignore the problem," Florence says.

Florence discovered that when users exited the general-ledger program into the operating system, the date loaded into the operating system was the "base date" of the program—in this case, 1-01-1980—not the date on which the user entered the file. Examination of a master file of all the dates that had been logged into the file would show only a stream of 1-01-1980s. As a result, any attempt to control or monitor access to a file would be difficult, if not impossible, because there would be no way to determine when the file had been entered, Florence says.

IBM asserts that it thoroughly inves-

tigated the complaint. The glitch was confirmed, but IBM determined that it was easily rectified by simply keying the proper date into the directory of file entries. The glitch was not important enough to warrant a notice to dealers or a rewrite of the program's code, according to the spokesman.

He emphasizes that IBM didn't pooh-pooh Florence's problem, but says the glitch didn't seem to be giving users any trouble. "It's not as if we were besieged by 10,000 accountants who couldn't keep their dates straight," the spokesman says. Florence says he knows of several users who found similar problems. In any event, IBM recently stopped selling the Peachtree General Ledger package and about 20 other personal-computer software programs that have reached the end of their product lives.

THE ABCs OF DP

Having trouble explaining data processing and management information systems to your boss? Arthur Andersen & Co., the big accounting and consulting organization, has prepared a helpful brochure, "Trends in Information Technology: 1985," which your boss should find most enlightening. Free copies are available from local Arthur Andersen offices or from the corporation's headquarters at 69 W. Washington St., Chicago, IL 60602.

BATTLE OF THE MODEMS

Are critical data transmissions being jeopardized by a modem that produces an unacceptable number of errors? General Datacomm Industries Inc., Danbury, CT, has introduced a 1,200-bits-per-second (bps) personal-computer modem, the GDC 1200, which it claims operates with a much lower error rate than the popular Hayes Smartmodem 1200 from Hayes Microcomputer Products, Norcross, GA.

In a benchmark test conducted by Continental Testing Laboratories, Fern Park, FL, an independent testing firm retained by General Datacomm, the Hayes modem made hundreds more errors than the GDC 1200. The tests were conducted on a simulated 3002 line (a Bell standard that's characteristic of an unconditioned leased line). On the same low-quality line with a moderate noise level, the Hayes 1200 averaged 467 errors per page; the GDC 1200 made only two errors per page. A Hayes spokesperson notes that the tests were conducted on a leased line and not on a dialup network. On the dialup network, which Hayes claims would ordinarily be used with a 1,200-bps modem, results would have been comparable, according to the spokesperson.

GDC President John C. W. Taylor claims that the Hayes modem has nearly twice as many parts, one factor that can influence the error rate. The GDC 1200 can continuously monitor telephone-line conditions and automatically adjust for them. Hayes has error-correcting software to achieve the same results.

The GDC 1200 costs \$699, the same price as the Hayes Smartmodem 1200. Communications software is available for \$199, and a software-update service is available free for all modems and software bought by November. For more information, call (203) 574-1118.

NEWS BRIEFS

SPERRY CLONE

A clone of the IBM PC AT is in the works at Sperry Corp., Blue Bell, PA. Officials recently told Wall Street analysts that Sperry's new desk-top computer is evidence of a new commitment to offer a full range of products to its customers—products compatible with those of IBM. Sperry is remaining secretive about the machine until it's actually announced, but it says the desk-top will be purchased from an outside manufacturer—whom Sperry refuses to identify—and marketed under the Sperry logo. Mitsubishi Ltd., a major Japanese manufacturer, makes Sperry's current micro.

Sperry has other new products on the drawing board, including the Eagle, an array-processor attachment designed for scientific number-crunching applications, to be introduced within the year. The company's plans for the more distant future include a desk-top-size mainframe series and a family of mainframes based on CMOS technology, which delivers greater power using less energy. According to Joseph J. Kroger, president of the Sperry Information Systems Group, the products now in development are examples of Sperry's strategy to become a supplier on technology's leading edge.

DATAPoint UNIX

Datapoint Corp., San Antonio, TX, has joined the Unix-look-alike contest with the introduction of a 32-bit supermicro that supports Unos, a derivative of Bell Labs' Unix from Charles River Data Systems, which manufactures the computer. Datapoint hopes to sell the machine—the Datapoint 3200—as a stand-alone as well as to purchasers of its Arc local-area network. The base system, without software, sells for \$15,430. Unos goes for \$1,000 including 1 Mbyte of internal memory, 32

Mbytes of disk storage, and four serial ports. Optional communications controllers can add up to 28 ports. For information, call (512) 699-7000.

APRICOT BLOOMS

Apricot Inc., Santa Clara, CA, has expanded its product line with the Fls, a new version of its Fl microcomputer that has an MS-DOS operating system and comes with an infrared keyboard. The Fls has more memory than the Fl—512,000 bytes of random-access memory, expandable to 768,000 bytes. Priced at \$2,000, the Fls also features a double-sided 3 1/2-inch floppy-disk drive and the ability to generate color graphics. Available options include an infrared mouse and an expansion box for a Winchester-disk drive. For more information, call Apricot at (408) 727-8090.

ALL-IN-1 TALKS

The most glamorous option in Digital Equipment Corp.'s (Maynard, MA) updated All-in-1 office-software product line is a voice system that allows users to access electronic mail over any Touch-Tone telephone. The user simply places a call to his or her electronic mailbox, and Dectalk, a text-to-speech voice synthesizer with an unlimited vocabulary, "reads" the desired messages stored in All-in-1's files. WPS-plus, another optional feature in the All-in-1 line, includes a complete scientific/technical character set and equation editing. The user interface is consistent across the different functions and with the original version of All-in-1.

Digital's All-in-1 version 2.0 will be available this spring in the United States, Canada, and the United Kingdom. Pricing begins at \$7,500, depending on hardware configuration. Add \$4,500 per license for the Dectalk soft-

ware and \$4,000 for WPS-plus. The software runs on VAX 11/725 computers and larger systems, as well as the new VAX 8600 and VAX clusters. Upgrades are available for current All-in-1 office-system users.

FIRM OFFERS A LOOK AT IBM

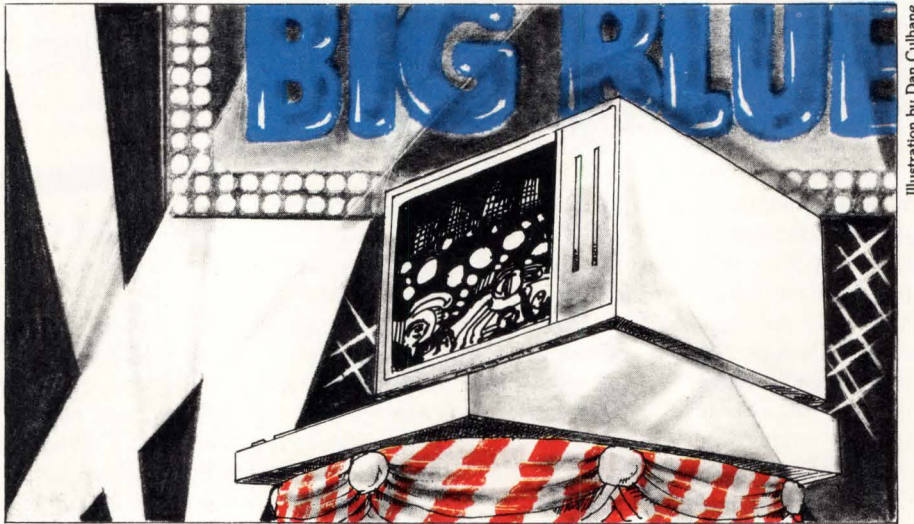
The Yankee Group, Boston-based market researchers, is sponsoring two two-day seminars called "The Sovereign Super State of IBM." The seminars, to be held February 5 and 6 at New York's Plaza Hotel and February 12 and 13 at the Claremont Resort in Berkeley, CA, will center on how IBM has changed in the past two years and the impact the changes have had on competitors and customers. Three categories of equipment—mainframes, minicomputers, and desk-tops—will be discussed. The registration fee is \$875 per person, or \$775 if more than one person from the same company attends. For more information, call (617) 542-0100.

INFRARED LINKS?

Becos Industries Inc. of Campbell, CA, claims to have developed a new infrared technology that eliminates the need for cables between computers and some peripherals. Called the Becos, the product consists of a pair of RS-232C devices capable of transmitting and receiving diffused infrared light that carries a data stream. According to Robert Cosby, chairman of Becos, the product allows multi-channel communication between a computer and peripherals. Cosby claims data can be transmitted accurately up to 30 feet. Cosby says the company will be ready to ship the Becos in March. Price, depending on the type of computer, will range from \$200 to \$400. For more information, call (408) 866-2644.

PERSONAL COMPUTING

by Susan Foster Bryant, Microsystems Editor



"NEW AND IMPROVED" BLUES

When it comes to corporate personal computers, yesterday's front-running machine can all too quickly become today's also-ran. Short life spans are a fact of life in personal computing. On the bright side, short life spans give users faster, more capacious hardware at lower and lower cost. On the dark side, short life cycles can be hazardous to the health of corporate equipment investments. Managers who invest in yesterday's leading-edge micro late can easily feel as though they've been left holding the bag when a hot new machine is announced.

There were lots of bags being held when IBM announced the latest addition to its line of Personal Computers, the PC AT. Industry experts marvel at the speed, power, and economy offered by the PC AT, but corporations with installed bases of PCs or PCXTs were left wondering if they'd missed out. What is IBM up to? Is the PC passe? Did managers who in good faith

recently bought these models get stuck? Should they discard their now outmoded micros for the PC AT?

A closer look at the PC AT can help to answer some of these questions. The heart of the PC AT is its 16-bit 80286 microprocessor, a processor that gives the PC AT processing speed and capacity almost equivalent to a minicomputer. With this processor, made by Intel Corp. (Santa Clara, CA), the PC AT operates two to three times faster than the PC or PC XT. With memory-expansion boards, the PC AT can be equipped with up to 3 million bytes (Mbytes) of random-access memory (RAM), nearly five times the RAM available for the PC and PC XT. In addition, the PC AT's 1.2-Mbyte floppy-disk drive, coupled with an optional 20-Mbyte hard-disk drive, doubles the information storage available in the other PCs. The processor also allows the PC AT to function as a multi-user, multi-tasking system. A new version of Bell Labs' Unix operating system,

Xenix, developed by Microsoft Corp. of Bellevue, WA, enables up to three users to share the PC AT's processing power.

IBM has big plans for its new micro. Big Blue has ordered enough chips from Intel to make two million PC ATs, which is about twice the number of PCs it projected to sell last year. The prospects for strong sales should have software developers scrambling to write programs for the Xenix operating system with the same fervor that followed the 1981 introduction of the PC. IBM has released a software-development aid for Xenix to promote the growth of Xenix software. In December, Concept Omega Corp. of Bridgewater, NJ, released a line of office-automation software for the multi-user system.

The fact that Big Blue developed such a machine isn't earth shattering; that it can offer such a machine at a starting price of \$3,995, however, is remarkable. Corporations that recently

(Continued on page 46)

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18 The Ampex 210 is from the Computer Products Division of Ampex Corporation. One of The Signal Companies ☛

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THE PC MATCHUP

	PC AT	PC XT	PC
IBM price	\$3,995	\$4,395	\$1,995
Memory (RAM)	256,000 bytes	256,000 bytes	256,bytes
Storage capacity	1.2 Mbyte high-density diskette drive	3600,000-byte double-sided 5¼-inch floppy-disk drive; 10-Mbyte fixed-disk drive	360,000-byte double-sided 5¼-inch floppy-disk drive
Microprocessor	16-bit Intel 80286	16-bit Intel 8088	16-bit Intel 8088
Multi-user capability	Yes; 3 users possible; system capability may be adjusted to add more	No	No
Options	RAM expandable to 3 Mbytes; 41.2 Mbytes total disk storage available with addition of two 20-Mbyte fixed-disk drives; Xenix operating system; 80287 math coprocessor	RAM expandable to 640,000 bytes; communications adapters; 8087 math coprocessor	RAM expandable to 640,000 bytes; 720,000 bytes total disk storage available with addition of second diskette drive; 8087 math coprocessor
Expansion slots	8	8	5

*Maximum-configuration units with keyboards

(Continued from page 42)

bought PC XT's for \$4,275 can't be too thrilled knowing that, had they waited, they could have had a PC AT with twice the speed and storage capacity for \$5,795 (the price of a PC AT with the 20-Mbyte hard disk included).

Where does all this leave the now-weak siblings in the PC family? Obviously, the PC and PC XT take a back seat to the PC AT when it comes to performance. And, right now, neither older model—particularly the PC XT—comes close to matching the value of the PC AT dollar for dollar. But don't expect Big Blue to abandon its older PC models. Experts believe that IBM will cut its prices for the PC and PC XT to capitalize on its well-publicized effort to become the lowest-cost manufacturer of micros.

IBM also has plans for including all members of its PC family in two of its most eagerly awaited projects. The PC family plays a big part in IBM's forthcoming integrated office-automation/data-processing system. (See Following the Leaders in this issue.) Big Blue has stated that the recently unveiled IBM PC Network—a network made by Mountain View, CA-based Sytek Inc. that embraces all members of the PC family—will have a part in its own token-ring local-area network, slated for release next year. Although IBM released the PC AT and the PC Network

simultaneously, the PC AT holds no special place in the network. The network operates on a peer-to-peer basis, meaning that no one machine is the focal point. Corporate users can install the network without having PC ATs.

Thus, corporations that have invested in PCs and PC XT's aren't stuck with dead-end machines. Still, their micros lack the power of the PC AT. Many corporations undoubtedly will be tempted to replace their PCs with PC ATs or at least add a number of PC ATs to their office systems. These users need to consider a few factors before they give in to the temptation.

First, of course, PCs and PC XT's handle many tasks very well. The PC AT may be overkill for some applications. Second, users who buy PC ATs for their multi-user features may be disappointed at first. To operate as a multi-user micro, the PC AT must run the Xenix operating system. Because Xenix is new, there is very little software for it. Although software support is expected to grow, the dearth of software limits use of the PC AT as a multi-user system at present. In addition,

users need to consider the fact that the PC AT can't support more than three users; some multi-user micro systems now available can support as many as 16 users. Corporations that plan to connect PC ATs in the IBM PC Network run into another obstacle. The PC AT can only be connected to the network as a single-user micro.

A more serious problem in using an PC AT with PCs and PC XT's concerns the PC AT's high-capacity floppy-disk drive. Data written on the PC AT's 1.2-Mbyte floppy drive cannot be read by the 360,000-byte floppy drives of the PC and PC XT, making data sharing cumbersome. Offices can easily find themselves saddled with the problem of having to deal with two sets of data disks, defeating the purpose of standardizing on the IBM PC line.

It's clear the PC AT is IBM's micro of the future—at least until the next advance in speed and capacity comes along. But corporations that are happy with their present micro systems need not jump on the PC AT bandwagon right away. Such companies may find it easier to sit back and gradually integrate PC ATs into their offices, safe in the knowledge that support for the PC and PC XT won't be cut off overnight. Still, managers who bought PCs or PC XT's just before the unveiling of the PC are likely to feel as though time has passed them by. □

Don't expect Big Blue to abandon its older PC models.

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STRICTLY SOFTWARE

by David Kull, Software Editor



Illustration by Ned Butterfield

PEOPLE PROGRAMS

You don't have to look too far to see the improvements information technology can make in a human-resources department. Personnel data that used to be buried in file cabinets can be retrieved quickly and effortlessly with a computerized database. A computer can help to streamline the administration of employee-benefits programs, reducing departmental costs.

Initially, corporations that introduce information technology into their human-resources departments want simply to reduce costs and increase productivity within the departments themselves. But many corporations are finding that human-resources information systems can do more than improve operations within the human-resources department.

For instance, more and more companies are revamping their employee-benefits packages to offer flexible benefits—sometimes called cafeteria benefits—that give workers attractive

options while reducing the overall cost of benefits to the corporation. Some companies are cutting benefits costs further by using human-resources information systems to develop self-insurance programs that eliminate the need for outside insurance carriers. And some corporations are using skills-tracking programs—programs that record each employee's job, education, training, and salary histories—to help human-resources experts analyze and apply employees' skills.

For human-resources information systems to be effective, data-processing and human-resources managers must work together. It would be difficult—if not impossible—for companies to administer flexible-benefits or self-insurance programs or to treat employees' skills as a pool of resources without a computer, and it would be equally difficult to maintain such an information base without a dp professional. On the other hand, only a human-resources pro who understands the highly com-

plex and volatile issues of law and corporate policy can pinpoint information needs and implement personnel programs.

Cooperation between human-resources and dp departments helps to prevent some embarrassing—and potentially costly—problems. The software or timesharing system human resources uses to keep track of personnel data or administer benefits loses value if it is incompatible with the system dp uses to allocate payroll deductions and write checks, for example. Incompatibility requires separate data entries, prevents checks on consistency between systems, and invites such problems as having an employee who is paying for family medical coverage being erroneously enrolled in an individual-coverage plan. Such a discrepancy can go unnoticed until the employee puts in a claim for a spouse.

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ship in the Association of Human Resource Systems Professionals, an organization for specialists in human-resources information systems, has grown from 30 to more than 1,300 since its founding in 1980. According to the association, about three-quarters of its members work in human-resources departments; the rest are in MIS/dp.

To ensure continued cooperation between human-resources pros and dp-ers, some corporations have established information-systems groups within their human-resources departments. These groups include staff members who have both human-resources and dp experience.

"We're more than a liaison between data processing and human resources because we understand the information technology," says Abe Egelman, special-projects director for the human-resources information-systems group at Time Inc., the New York-based pub-

lisher. He and most of the eight other staff members in the group have some dp experience. Time Inc. uses a package from Information Science Inc. for personnel and payroll applications. Time also uses Focus, the fourth-generation database and language from Information Builders in New York, for analyses and reporting. Egelman's group helps users in the human-resources department develop applications with Focus and advises the dp department on setting priorities for maintenance and enhancement of the main systems.

Armco Inc., the Middletown, OH-based steel producer, deployed an automated system to develop a flexible-benefits program for 7,600 of its 36,000 employees. The program, which covers all salaried employees and some hourly workers, offers a choice of four medical plans with varying deductibles and claim limitations,

two dental plans, an eye-care plan, and an option to sell back to the company up to a week of vacation. Each covered employee starts off with a company-paid \$200 flexible-reimbursement account. Employees can increase that stake by electing salary deductions or by opting for less than the standard coverage for some benefits. They can use the account to buy coverage above the standard offering for another benefit or to pay insurance deductibles. At the end of the year, employees can take any money left in the account as salary, or roll it into a pre-taxed savings plan.

According to Charles Fortener, senior data administrator for Armco's human-resources information group, the standard packages offered under the flexible plan are somewhat less comprehensive than those provided before the plan went into effect, giving the

(Continued on page 54)

HUMAN-RESOURCES SOFTWARE

Vendor	Package	Requirements	Price	Circle
Alexander & Alexander (404) 261-3400	Pension Management System	IBM mainframes	\$50,000 and up	464
Alpha Syst. (617) 620-0983	First Personnel System	IBM S/34 and S/36	\$3,950	465
American Software (404) 261-4381	Employee Expense System	IBM mainframes	\$30,000 to \$42,000	466
Argonaut Information Syst. (415) 444-5954	AIS Human Resources System	DEC VAX; HP 3000; IBM mainframes	\$6,000 to \$50,000	467
Breeze-Illinois (309) 695-2511	Labor and Attendance	IBM S/34	\$2,000	468
Business Syst. Assoc. (818) 998-7227	Pension Administration System/3000	HP 3000	\$30,000 to \$75,000	469
Cedaco Sales (601) 982-8078	Decal	TI 990 and other systems	\$5,000	470
Collier-Jackson (813) 872-9990	CJ/Personnel	HP 3000; DEC VAX	\$18,000 to \$20,000	471
Computer Application Syst. (305) 736-3500	Time and Attendance System Software (TASS)	IBM Series 1	\$13,500 to \$20,000	472
Computer Assoc. Int'l. (516) 333-6700	CA-Personnel Management	Data General; IBM mainframes and PCMs	\$9,000 to \$19,500	473
Computer Information Syst. (702) 736-4215	Personnel & Applicant Tracking System Payroll	IBM S/34 and S/36	\$2,800 ea.; \$4,800 combined	474
Computer Svcs. Int'l. (602) 832-8230	Pension/70	IBM 370, 43XX under CMS or VM	\$10,000	475
Computing Technicians (714) 554-1551	Direct/3000 Personnel Management	HP 3000 under MPE; Wang; DEC VAX	\$10,000 to \$30,000	476
Comshare (313) 994-4800	Profiles/3000 Profiles Applications Library Distributed Profiles	HP 3000 and Series 37 Timesharing services	\$19,950 to \$25,500 Based on use	477
Condata (215) 569-4240	Pas-Ryte/Pay-Ryte	Online: IBM under CICS; Batch: IBM, Honeywell, Sperry, Burroughs	\$18,000 to \$49,000	478

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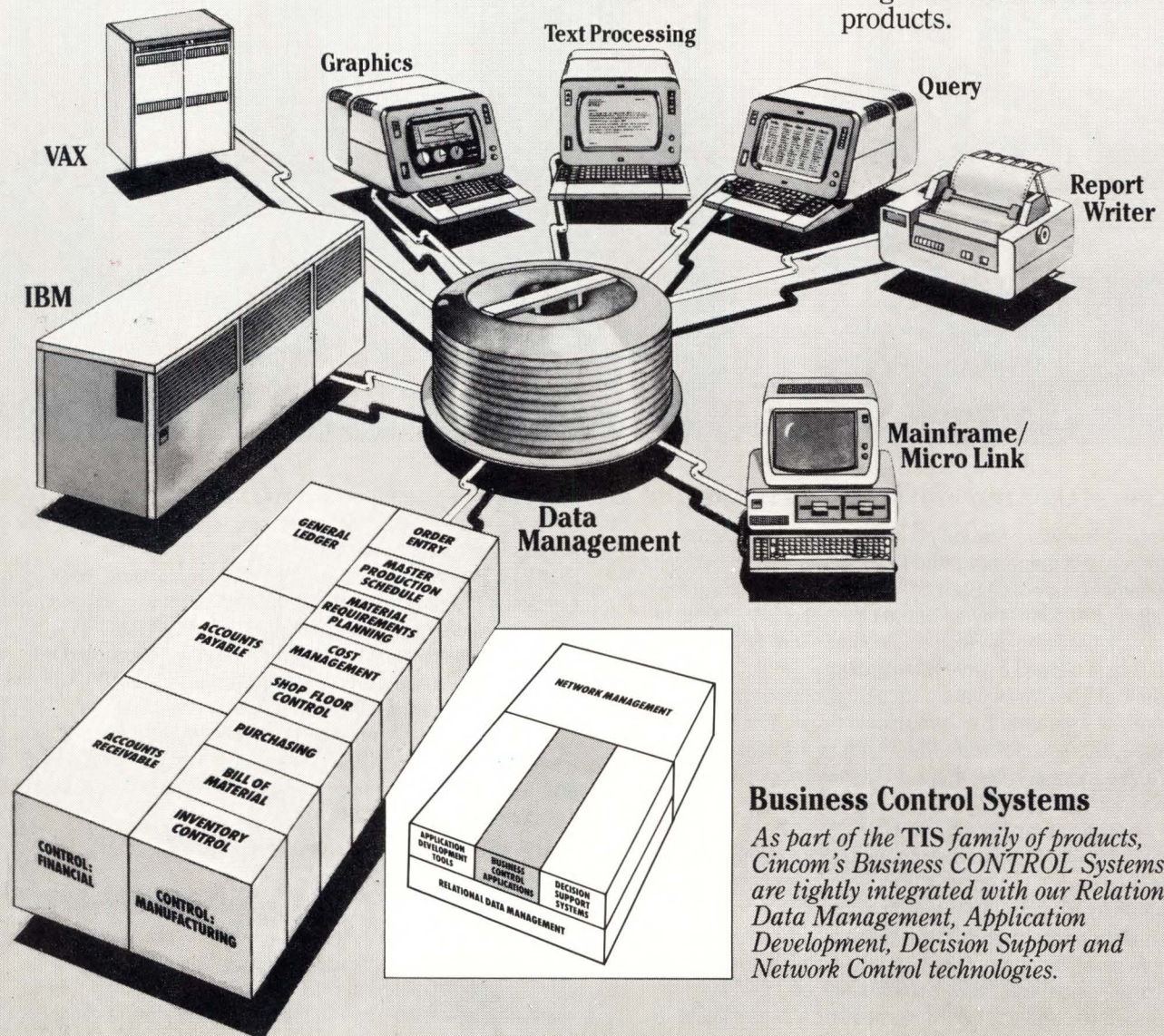
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- Material Requirements Planning
- Shop Floor Control
- Purchasing
- Cost Management
- Order Entry

And, each CONTROL: Manufacturing component is tightly integrated with the corresponding components of our CONTROL: Financial systems:

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#2 Industry-Acclaimed Technology

Cincom's Business CONTROL Systems are an integrated part of the TIS™ family of technologies. They are founded on our highly acclaimed relational data management technology, through which you can build a complete manufacturing/financial data base. And, you can extend your applications using Cincom's 4th Generation language MANTIS®.

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#3 Extensive Implementation Experience

Cincom Systems has been helping manufacturing companies implement manufacturing and financial systems since the late 1970's. Our *people* who support these products are some of the best in the business. From education, to documentation, to on-site service; Cincom knows what it takes to produce the kind of productivity improvements today's manufacturing organization needs. In many ways, the experience of our people is as important a part of our Business CONTROL Systems as the software itself.

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STRICTLY SOFTWARE

(Continued from page 50)

company an immediate savings. If an employee chooses to buy more than the standard coverage, tax advantages from salary deductions and the savings plan offset part of the cost, Fortener says. (A ruling by the Internal Revenue Service has since reduced, but not eliminated, the tax advantages of reimbursement accounts.)

Fortener, along with three full-time programmer-analysts from Armco's information-resources-management department and various part-time contributors, developed the system that administers the flexible-benefits program. They used a benefits-management package from Genesys Software Systems as a transaction processor, which helped them design their database, according to Fortener.

"We could add about 10 fields a day without having to write code and

recompile," he says. If the team had had the time, he points out, it could have built its own transaction processor. As it is, the Armco designers developed their own interfaces between the flexible-benefits system and the various payroll and personnel systems used by the company's 10 divisions. It also built an end-user interface that masks the Genesys commands.

Fortener's human-resources information group includes two other staffers, who, like Fortener, have system-design experience. The group helps in the design, implementation, and training phases of major projects such as the flexible-benefits system. It also supports human-resources staff in analyses and reporting, using the SAS System from SAS Institute of Cary, NC, and some PL1 and Cobol programming. The information-resources-management department handles most sys-

tems development and maintenance. "I'm not sure any corporation can get by without some system support within human resources," Fortener says. "You can't just bring in a programmer and say, 'This is what we want.'"

Kellogg-Rust Corp., a Houston-based engineering and construction corporation, offers its 4,500 employees flexible benefits through Flexsystem, a timesharing service from Hewitt Associates. The system generates personal enrollment forms describing each employee's options, stores each employee's insurance-coverage elections, applies the appropriate rates, and sends each employee a report confirming the coverages and costs. It also reports to the insurance carriers to initiate coverage. Flexsystem interfaces with Kellogg-Rust's payroll application from Management Science America (MSA)

(Continued on page 58)

HUMAN-RESOURCES SOFTWARE

Vendor	Package	Requirements	Price	Circle
Convey (513) 461-4021	Ready	IBM mainframes	\$15,000	479
Cortex (617) 237-2304	Cortex/HRM	DEC PDP-11 and VAX	\$10,000 to \$30,000	480
Customation (201) 738-4755	Executive Resource	Datapoint and compatibles	\$4,000	481
Cyborg Syst. (312) 454-1865	Payroll/Personnel	Wide range of mainframes and minis	\$75,000 to \$115,000	482
DP Consulting (304) 232-1655	Topps	NCR I 9000, V 8000	\$30,000 to \$95,000	483
Dyatron (205) 956-7500	Omni-Plan	IBM 370 under MVS	\$125,000	484
Generated Syst. (312) 668-0506	Payroll/Personnel	Wang VS	\$15,000 to \$25,000	485
Genesys Software Syst. (617) 685-5400	Payroll Accounting Personnel Administration Benefits Management	IBM mainframes	\$50,000 \$65,000 \$110,000	486
Hewitt Assoc. (312) 295-5000	Flexsystem	Timesharing service	Based on use	487
JB Hires Assoc. (201) 529-4553	Chronometrix	DEC VAX and PDP-11	\$6,000 to \$16,000	488
IBM (914) 765-1900	Interactive Personnel System	IBM systems under IMS/VS, CICS/OS/VS, or CICS/DOS/VS	\$1,110/mo.	489
Information Assoc. (716) 467-7740	Series Z	DEC VAX; IBM 43XX and 30XX	\$45,000 to \$90,000	490
Information Science (201) 391-1600	InSci Human Resource System InSci Payroll InSci Personnel/Payroll Affirmative Action Planner Pension Administration System	IBM mainframes	\$90,000 to \$100,000 \$45,000 to \$120,000 \$75,000 to \$230,000 \$30,000 \$30,000 to \$40,000	491

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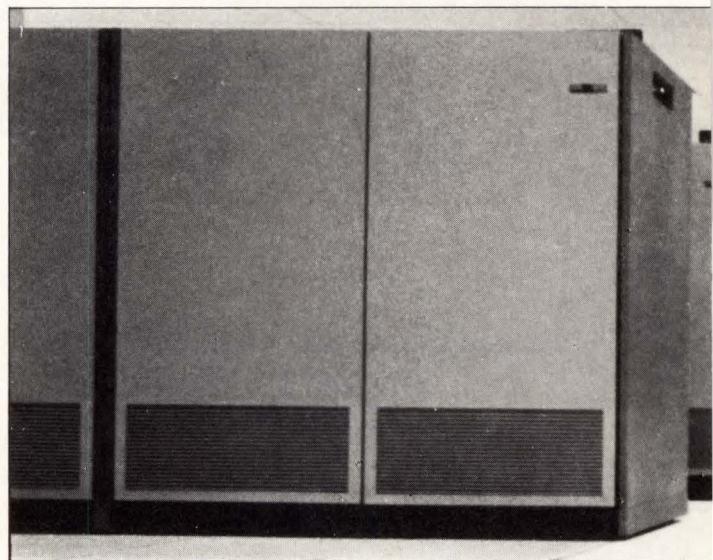
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Photo courtesy of McDonnell Douglas Corp.

STRICTLY SOFTWARE

(Continued from page 54)

to order the appropriate payroll deductions automatically. The system also administers the employees' reimbursement accounts and a savings plan, and processes claims.

According to Judith Tansey, benefits manager at Kellogg-Rust, the timesharing system allowed the corporation to get its program running within six months of the go-ahead, much faster than would have been possible with an internally developed system. The expected cost for Flexsystem was also less than the estimate for in-house development, Tansey says. She adds that Flexsystem can accommodate Kellogg-Rust's special needs, which include options for employees in offices across the country to sign on with eight different health-maintenance organizations.

Many organizations are also looking for savings in self-insurance plans,

which might be administered in-house or by a third party. With a self-insurance plan, a company avoids the cost of contracting with an insurance carrier by depositing employee premiums into a corporate-controlled fund for settling claims. Self-insurance requires considerable data-processing capabilities and considerable cooperation between human resources and MIS/dp.

The Automobile Dealers' Trade Association of Maryland provides medical, life, and disability insurance to employees of about 200 dealership-members—about 5,500 employees and 7,500 dependents. Quic Claim, an insurance package from Resource Information Management, allows in-house administration of the program, according to Roy Milan, the association's administrative vice president. The association had administered

a self-insurance program manually for many years but recently found the complexities unmanageable, Milan says. In some cases, claims were being processed and paid after coverage had been canceled, he says.

The Quic Claim system, which runs on an MDS Qantel minicomputer, handles billing, processes claims, and writes checks. It requires very little clerical or technical attention, Milan notes. Although the association is happy with the system and with being self-insured, Milan recommends that companies considering self-insurance proceed cautiously. If a self-insurance program has fewer than 1,000 enrollees, the covered risks will probably not be sufficiently spread, he contends. Even with a large number of participants, a huge claim can bust a self-insurance fund. "Stop-loss" coverage from a reinsurer can protect against this, but the premi-

HUMAN-RESOURCES SOFTWARE

Vendor	Package	Requirements	Price	Circle
Innovatek Microsyst. (914) 373-9003	Timetrack V2.1	DEC PDP-11	\$775	492
Integral Syst. (415) 939-3900	Human Resource System Payroll and System	IBM mainframes and PCMs IBM S/38	\$38,000 to \$250,000 ea.	493
Interactive Computer Syst. (603) 893-8520	ICS Employee Receivables and Travel Expenses System	IBM 370 and 30XX; Wang VS Series	\$25,000 to \$45,000	494
Johnson Telecommunications (916) 873-2250	Employee Benefits System	Data General Nova and Eclipse	\$3,000	495
McCormack & Dodge (617) 655-8200	H/R Plus on Special Products H/R; Millennium	IBM mainframes and PCMs	\$49,500 to \$110,000 \$67,500 to \$136,000	496
Martin Marietta Data Syst. (301) 982-6500	MAS-Personnel	IBM 303X, 308X and 4300; DEC VAX; HP 3000	\$19,000 to \$150,000	497
MSA (404) 239-2000	Payroll System Personnel Management & Reporting	IBM mainframes and PCMs	\$32,000 to \$97,000 \$32,000 to \$293,000	498
National FSI (214) 350-0913	EBAS (Employee Benefit Administration System)	Wang 2200 under VS; IBM 43XX under OS or DOS	\$14,000 to \$77,000	499
National Information Syst. (408) 257-7700	Pres	DEC System 10 and 20	\$15,000 to \$40,000	500
Omega Syst. (412) 681-7575	Employee Benefits	Cobol computers	\$75,000	501
Organization Change (203) 242-8883	Human Resources Information System	IBM mainframes; Wang; DEC; others	\$8,000	502
Personnel Data Syst. (215) 828-4294	Pass/Accu-Pay PDS-Personnel System	Wide range of mainframes and minis	\$19,000 to \$160,000	503
Productivity Syst. (813) 689-4066	Productivity Management Systems Employee Profitability	IBM S/34 and S/36	\$1,000	504

STRICTLY SOFTWARE

ums for such coverage will probably go up if it's used—perhaps even if it's not—and the self-insured corporation has little choice but to pay.

"If you buy employee insurance, you can always cancel if you are upset with the carrier," Milan says. "But once you become self-insured, you can't just back out if it's not working well." He adds that an organization should not consider self-insurance unless it's ready to hire its own risk manager, even if information technology makes it possible for clerical workers to administer the program.

Widespread use of the term "human-resources department" to refer to what used to be called the personnel department reflects the corporate view that employees are a resource that, if properly managed, can yield optimal value, as with any other corporate resource. To manage its human resources properly, a corporation requires de-

tailed information about its workforce, along with tools for analyzing the data. McGraw-Hill Inc., the New York-based publisher, deploys its forces with the help of Personnel Management System from Tesseract Corp. The package records job, training, and salary histories, Equal Employment Opportunity codes, and other personal data on each of the corporation's 13,500 employees. End users can also specify other data to be included in the system without having to write programs.

According to Donald Dole, director of McGraw-Hill's human-resources information systems, placement specialists use the job-code system to locate and review individual employees for an in-house recruitment program that places on-board expertise where it's needed most. Salary administrators also use the system to confirm individual salaries and do reference checks. The Tesseract system also provides a

database for higher-level reporting and analyses. The Tesseract files are transferred weekly to Focus for most of the work, which is done primarily by end users. Typical applications include studies of the effects that changes in salary ranges would have on the payroll and affirmative-action reports.

The human-resources information specialist's position within the organization will affect the way he or she applies technology to corporate problems. For example, someone who reports to the benefits manager will concentrate on the benefits system. Since payroll systems were one of the earliest dp applications, information specialists in human resources usually come from compensation departments. But with the development of newer applications, human-resources information specialists are taking on broader responsibilities and occupying a higher niche on the organizational structure. □

HUMAN-RESOURCES SOFTWARE

Vendor	Package	Requirements	Price	Circle
Resource Information Mgt. (312) 789-0230	Quic Claim	MDS Qantel	\$57,500	505
I. Lawrence Richardson & Assoc. (217) 525-7272	Organizational Indentation Charting System	IBM mainframes	\$15,000 to \$25,000	506
Ross Syst. (415) 856-1100	Maps/ISO	DEC VAX	\$10,000 to \$15,000	507
RSA Products (201) 335-7800	Direct/3000	HP 3000	\$15,000	508
RTC Syst. (617) 695-5008	Payroll/Personnel	IBM S/38	\$25,000	509
SMS Mgt. Syst. (312) 293-5699	Human Resources Management System	Sperry 1100	\$50,000 and up	510
Software Int'l. (617) 685-1400	Human Resources	Wide range of mainframes and minis	\$15,370 to \$21,800	511
Software Plus (201) 933-7587	HR/38	IBM S/38	\$15,000 to \$30,000	512
Systech (312) 352-0365	Pension Fund Administration	HP 3000	\$30,000 to \$70,000	513
Tesseract (415) 543-9320	Personnel Management System Benefit Plan Administration System Cafeteria Benefit Plan Administration Payroll Claims Processing	IBM mainframes and PCMs	\$100,000 to \$200,000 ea.	514
Tres Syst. (214) 248-8737	Tres Personnel System Human Resource System	IBM mainframes	\$75,000 to \$135,000 ea.	515
Vista Computer (914) 592-8190	Human Resources	Data General Nova 4 and Eclipse	\$15,000	516
Watnik (201) 467-4488	Watnik System	IBM and Amdahl mainframes	\$23,000/yr.	517

DATA COMMUNICATIONS

by John Seaman, Data Communications Editor



Photo by Harold M. Lambert

IGNORING INTEGRATION

Are you appalled by the cost of the new, integrated voice/data private automatic branch exchanges (PABXs)? Does spending \$1,500 per port for integration seem too much for you? Then there's an alternative you should consider—ignore integrated communications, for the moment, and install an intelligent data-only PABX.

Networks with data PABXs can't switch telephone traffic. Why should you opt for two PABXs (one for data and one for voice) when a single integrated voice/data PABX can accomplish both of these functions? The answer is to achieve lower total cost. Data PABXs cost as little as \$120 per line switched; integrated voice/data PABXs cost from \$700 to \$1500 per port.

John Duffer, president of Telecom Planning, a Melbourne Beach, FL, consultancy, says: "Data PABXs can handle very large systems—up to several thousand lines. A 32-port data

PABX can support up to 100 terminals, and is particularly well suited to systems with many asynchronous terminals." Some data-PABXs will also handle synchronous terminals. Certain users and applications are prime candidates for data-only networks controlled by data PABXs: banks, insurance carriers, shop-by-catalog retailers, and other organizations with many databases and a need to distribute operations.

There are two kinds of data PABXs: the circuit-switched data PABX, sometimes called a "true" data PABX, and the newer, software-configurable, packet-switched PABX. In the switching matrix of a circuit-switched data PABX is a physical connection for each transmission as it goes through the switch. This path remains in place for the duration of a single transmission. In the packet-switched units the path may change repeatedly during a single transmission, as different paths momentarily seem more expedient to the PABX.

Packet-switched data PABXs are

more applicable to distributed or ring networks, whereas circuit-switched data PABXs are better suited to centralized, or star, networks. These classifications are not absolute, however, and both packet- and circuit-switched PABXs can be adapted to either ring or star networks. Packet-switching devices are generally more complex to set up, although the cost per line is about the same for packet- and circuit-switched devices.

The Virginia Circuit Exchange 1000 (VCX) packet-switched PABX from Network Products supports as many as 4,608 ports at a single location and has a data-input rate of up to 19,200 bits per second (bps) on all ports simultaneously, and a 256,000 bps trunking speed. Peter Gremlin, operations manager of the laboratory-data division at University Hospital in Minneapolis, has tested and evaluated the VCX 1000. The hospital's computer system connects six buildings via cable runs of up

(Continued on page 64)

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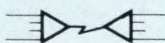
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*Source Datamation Magazine 1983 Brand Preference Study of printer preference by end users and OEM's.

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November 12

Mr. Phillip Wallace
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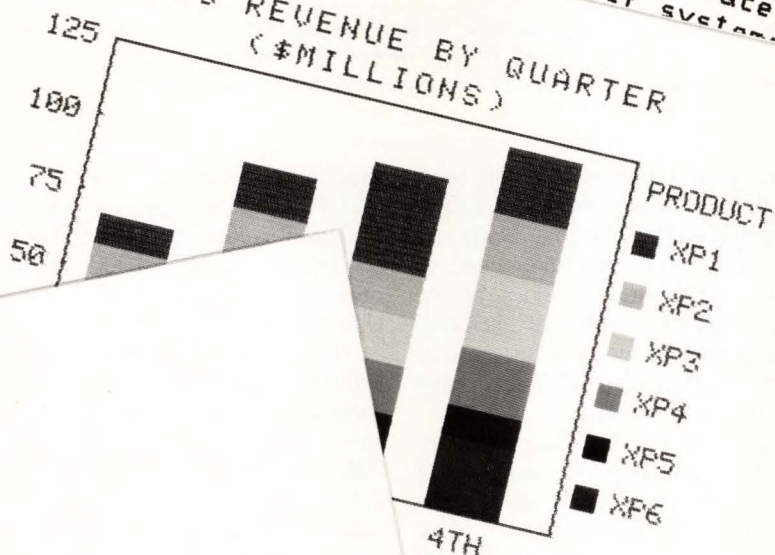
Diablo Dot Matrix Printers can print software or programs, and they can print alphabets or graphics.

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Diablo Dot Matrix Printers can print in a wide range of color and choices.

Diablo Dot Matrix Printers can print in a wide range of color and choices.

Diablo Dot Matrix Printers can print in a wide range of color and choices.

CIRCLE 34

(Continued from page 60)

to 5,000 feet. The system is built around twin Model 1784 mainframes from Control Data Corp. (Minneapolis) supporting 80 terminals, 30 character printers, and 10 online diagnostic instruments. The system also includes a Burroughs Corp. (Detroit) Model 6800 mainframe. Gremlin explains: "We link terminals, printers, and diagnostic devices via dedicated in-house telecommunications lines. Finally, we have dialup links to off-campus physicians."

Gremlin explains further that the hospital's labs must access the Control Data 1784s and the Burroughs 6800 for applications. "Currently, we're running parallel wiring where necessary," Gremlin says. "But, by using the VCX 1000, we can eliminate half the wiring and still switch between the two 1784s and handle port contention on the system."

Gremlin believes the VCX 1000 is flexible enough to adapt to future needs. "I looked at several data PABXs, but only the VCX 1000 had the potential to handle the system configuration the hospital is ultimately building toward: economically utilizing 300 connections on the PABX in an asynchronous manner," Gremlin says. "In some applications," reports Gremlin, "our 1784-based system, which uses asynchronous ASCII RS-232C protocol, has to act like a terminal on the Burroughs 6800. The Burroughs branch of our network uses the Burroughs Poll-select synchronous protocol and has its own character set. The VCX 1000 will allow us to develop a software-conversion protocol."

Ashok Dhawan, vice president of PABX-switch development at Micom, emphasizes that there are advantages to both circuit- and packet-switched PABXs. "On the VCX 1000, every character that goes through the switch has to be processed by some intelligent device," Dhawan says. "When the

DATA PABX SUPPLIERS				
Vendor	Model	Price per line	Notes	Circle
Develcon Electronics (215) 443-5450	9006	\$80	C, A, S	451
Gandalf Data (312) 541-6060	PACX2000	\$180	D,A	452
IBC (516) 567-1800	CSX1024	\$200	C, A, S	453
Infotron (609) 424-9400	IS4000	\$125	D, A, S	454
Micom Syst. (805) 583-8600	Micro600	\$150	C, D, A, S	455
Network Products (919) 544-8080	VCX1000	\$120	D, A, S	456
Timeplex (201) 930-4600	NM144	\$250	C, D, A, S	457

Key to notes: C, operates in centralized mode; D, operates in distributed mode; A, handles asynchronous data; and S, handles synchronous data.

Prices given as per-line costs for the most inexpensive possible configuration; other arrangements may cost more.

switch gets busy, it doesn't have enough capacity and begins to buffer. When that happens, it may block and even drop data. You then need to match data from both sides of the switch. The circuit-switched Micro600 is transparent to the data once a connection is established. You don't have to do flow conversions."

U.S. Windpower Inc., San Francisco, a windmill manufacturer, went with a data PABX because it had data-switching needs that had to be met before the company was ready to commit to an integrated voice/data PABX. Mark Butler, MIS/dp manager, says, "As of now, we have no plans for an integrated voice/data PABX, the intelligent data PABX works so well. The VCX 1000 can link our four offices in Burlington, MA, Needham, MA, San Francisco, and Livermore, CA. The integrated voice/data PABX can't do that as effectively. In the future, we want all our terminals to talk to each other—regardless of their locations,"

says Butler. "We also will tie in IBM PCs, NEC micros, and data-acquisition terminals used in labs for online data collection." The VCX 1000 makes the protocol conversions needed to reach U.S. Windpower's goal.

The VCX 1000 supports 60 ports in Burlington and 120 ports at its windmill-power farm in Livermore, and allows for expansion. Says Butler, "We'll use the system for real-time data collection from the windmills, and for financial transactions, general-ledger, and accounts-payable functions. The VCX 1000 supports administrative functions that we couldn't conveniently handle otherwise."

Was there any concern at U.S. Windpower about the viability of the Network Products operation, which is in the startup category? "Yes," says Butler, "but we worked out agreements with Network Products that give us full access to its technology if the vendor fails to make it. Those agreements are about the best protection we can get under the circumstances."

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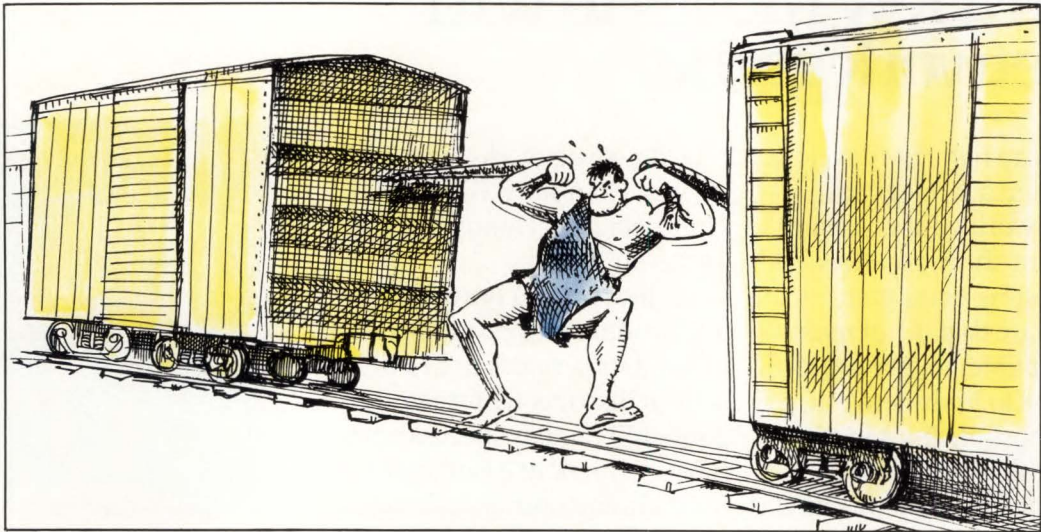
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FOLLOWING THE LEADERS

by Robert T. Fertig



BIG BLUE THINKS LINKS

For years, IBM supplied the most common office tool after the telephone—the electric typewriter. But, alas, all things must pass and the electric typewriter's primacy has been usurped by its electronic replacements. Undaunted, IBM now obviously has its sights set on dominating the automation of large organizations' offices.

In support of this effort, IBM—for the second time in 1984—unveiled a barrage of new hardware and software products designed to integrate office automation and data processing. Last April, IBM showed conceptually how its disparate workstations and terminals could be melded into information systems. It was obvious that the crafty behemoth had undertaken a huge software development effort. However, many IBM watchers doubted its ability to link its VM/370-based Professional Office System (Profs) with its MVS/370 and DOS/VSE-based Distributed Office Support System (DISOSS).

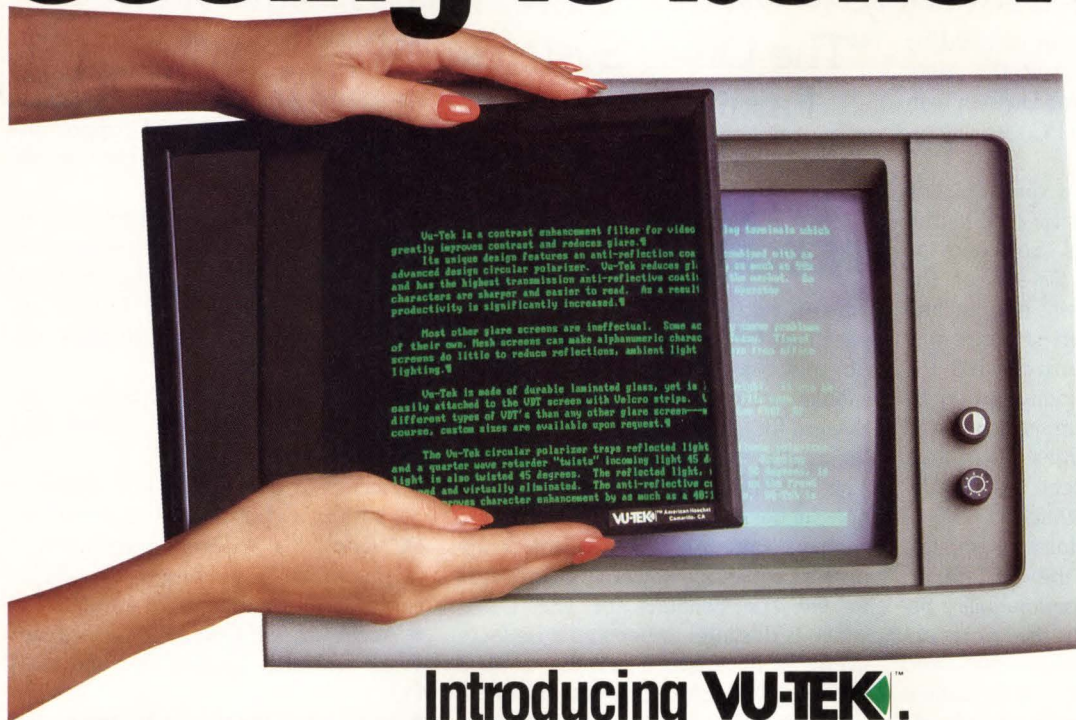
IBM's Office Systems Family (OSF), announced in October 1984, represents a major breakthrough for IBM toward its goal of integrating its office and data-processing systems. At last, IBM is in a position to challenge integrated data/office systems marketed by Digital Equipment Corp., Maynard, MA, (All-In-One), Data General Corp., Westboro, MA, (CEO), and Wang Laboratories, Lowell, MA.

OSF software offers full-function text editing, library service, and electronic distribution for IBM personal computers, System/36 minis, and System/370 mainframes. And office automation (OA) is implemented in conjunction with full dp support on Personal Computers, System/36, and System/370 processors. The software for PCs is just becoming available, and software for System/36 departmental systems will be available by July 1985. Full host support under DISOSS/370 won't be available until March 1986; IBM will offer other host support sooner.

The interconnection possibilities for PCs and System/36 and System/370 processors has been established through document-transfer links between Profs and DISOSS, and between S/36 and DISOSS, using IBM's first major implementation of Document Interchange Architecture/Document Content Architecture (DIA/DCA). In addition, IBM has added a more powerful version of the PC XT/370, based on the new PC AT micro, to the list of workstations that communicate with hosts operating under VM/370. The new PC AT/370 operates 25 percent to 200 percent faster than the PC XT/370. (For a comparison between the PC AT/370 and PC XT/370 see Personal Computing in this issue.)

Analysis of IBM's OSF convinces me that IBM has been developing a grand strategy for integrating its office products for several years. The April 1984 announcements afforded a glimpse of this grand strategy; and the OSF announcement affords a far more clear

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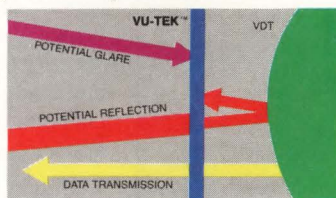
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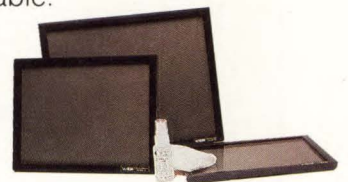
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view. Revelation has been delayed by software development and the progress of the Entry Systems Division with regard to the IBM PC and System/36.

Clearly, IBM's S/36 and PC line have become the bases for its integrated information systems. Selecting the System/36 and PC, instead of the older 5520 departmental system and Displaywriter, is a smart strategic maneuver by IBM; System/36 and PC are, essentially, commodity products. Market demand for them is strong and IBM has stringent control over their manufacture—in efficient, robot-operated plants—and marketing.

An extensive repertoire of applications is available for the System/36 and PC. To establish compatibility between the two products, IBM ports applications from System/34 and System/36 to the PC. Independent software houses and value-added ven-

"The Office Systems Family is IBM's scheme to dominate the OA market."

dors provide a constant flow of new applications for both the PC and System 36, and the availability of applications should differentiate the PC and System/36 from other hardware on the market and fuel additional demand. The commodity nature and application-richness of the PC and System/36 should negate any benefits IBM's competitors could derive from public access to the specifications for DIA/DCA, which is destined to become a de facto protocol standard. It will be a huge challenge for IBM's competitors to develop price-competitive alternatives to

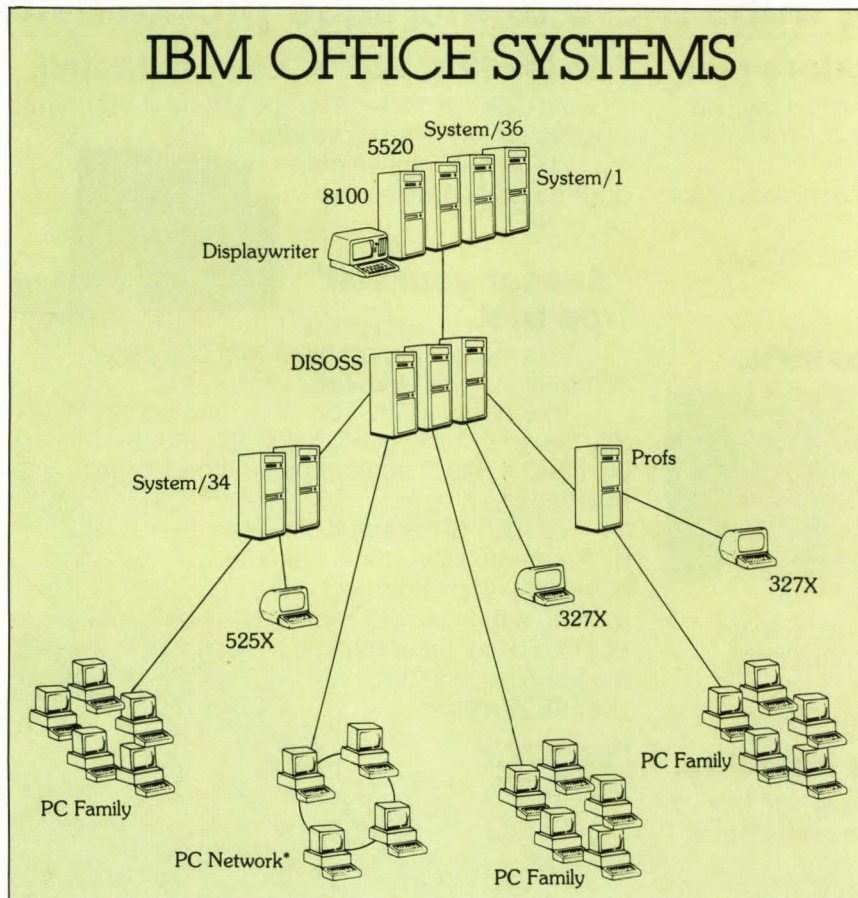
the PC and System/36, supply a comparable range of applications, provide the same homogeneous micro-to-mainframe interfaces, and support installations to the same degree as do IBM and its distributors.

OSF is a substantial beginning to OA/dp integration, and more support is forthcoming. Based on statements of direction issued when OSF was unveiled, IBM owes its customers the following:

- Links between the 8100, System/38, and S/1 minis and PC Cluster and DISOSS/370.
- Access to System/36 and System/38 library and distribution services for PC users. It's apparent that System/38, in particular, will play a role as a file server in future integrated systems.
- Access to DISOSS/370 library services for both System/36 and IBM PC.
- Access to DISOSS/370 library and distribution services for PC users attached to an IBM PC Network or other IBM networks.
- Personal Services/370 capabilities (electronic mail, library functions, distribution-list creation, and update) for MVS/TSO users.

IBM has substantially improved the function, performance, and price of its OA products in relation to Wang, Data General, DEC, and other major OA vendors. MIS/dp management now has less of a case for why it wants a vendor other than IBM for the office. While Wang, Data General, DEC, and others continue to have specific functional advantages (for example, ease of use) over IBM, the huge library of IBM applications software overshadows most of these competitive claims.

Why would IBM preannounce any product that has a lead time exceeding one year? Perhaps because Big Blue had to find a solution that justified past products and user investments as viable in the future. IBM's recent announcements achieve this goal, and its proposed integrated OA/dp systems just may result in the whole exceeding the sum of the individual parts. □

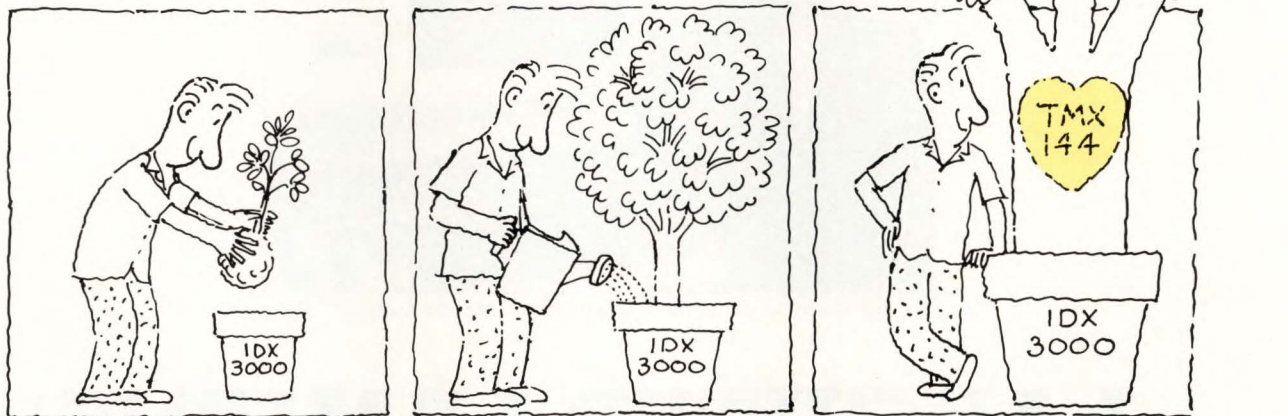


Family ties: Schematic representation of the interconnections made possible by the host of software programs introduced by IBM last October. Future software introductions are indicated by asterisks. IBM calls its software the Office Systems Family.

Robert T. Fertig is president of Enterprise Information Systems Inc., a technology consultancy in Greenwich, CT.

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THE T1-EFFICIENT NETWORK



TRAINING

by David Roman, Associate Editor



The only reason not to use humor is laziness, says Malcolm Kushner.

LAUGHTER LEAVENS LEARNING

Carol Saunders stood before the class of 26 new faces—all male. She could tell they were nervous about learning the new program. Each man fidgeted behind his terminal.

"All right, gentlemen, let me turn you on," began Saunders, a manufacturing consultant for Ask Computer Systems Inc. of Los Altos, CA, a software vendor that provides stand-up lectures to teach customers how to use its packages. The group roared with laughter as Saunders powered up their terminals to start the online instruction. "The laughter relaxed them and made them more comfortable. And the more relaxed they are, the more they'll learn," Saunders says. "Laughter is positive feedback. It overcomes students' fears, makes it easier for me to relate to them, and makes the classroom more fun."

Trainers are beginning to think seriously about humor as a teaching tool. "Training implies change, and change

always meets with resistance," says David Baum, a Philadelphia management consultant who studies the use of humor in the workplace. He believes a joke can break down trainees' initial resistance and can make the trainer more likable and accessible.

Merrymaking aside, Baum sees humor as a practical means of reaching and engaging a group. Since the average adult's attention span is about 20 minutes, a trainer who injects humor into his or her presentation every quarter hour or so will keep a training group's interest. "If you can weave jokes, comments, cartoons, slides, or pictures into your material," Baum believes, "it clearly helps trainees remember concepts, ideas, and figures."

However, a trainer shouldn't disrupt a presentation with humor for its own sake, cautions Malcolm Kushner, a self-styled "humor consultant" whose Malcolm Kushner & Associates is based in San Francisco. "Humor has to be relevant," Kushner says. "It's a classic mis-

take in public speaking to tell a joke that doesn't relate to the subject. Everyone will remember the joke, but forget everything else."

For example, Kushner advised one lecturer, who was speaking to a group of elderly citizens in San Francisco about safety, to build his most important points into a joke: "There are several things you can do to make your home safer. First, put a slide-bolt on the inside of your door. Second, put a peephole in the door. And third, move the door out of San Francisco." Thus the joke became a mnemonic for the information the lecturer wanted his group to retain, Kushner says.

The well placed joke doesn't have to be a zinger, Kushner says, because it's only there to establish rapport, emphasize a point, or help you move smoothly to another subject. "If the joke is relevant to your presentation, you shouldn't worry if it doesn't get a laugh. Nobody expects you to be a match for Rodney Dangerfield," he says.

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(Continued from page 70)

Trainers must be careful, however, of how and whom their humor tweaks. Slurs are never appropriate, but even the good-natured joke can backfire. "You can hurt someone without knowing it if you joke about a subject the other person is sensitive about," says Jack Hoffman, manager of human-resources planning and development for Subaru of America Inc. in Pennsauken, NJ. Effective use of humor can make a group receptive, he says, but the wrong style can make enemies. "If you use humor in a cutting way," Hoffman says, "people won't be drawn to you, they'll be repelled by you. People feel diminished if you make fun of their shortcomings or highlight their mistakes in front of a class." And making a student the butt of your jokes will do more than offend him or her; it will offend the rest of the class as well. Hoffman says it's safest to use humorous anecdotes or self-deprecating jokes.

"People who use sarcastic humor with a hostile twist to it," David Baum has found, "are generally perceived to be aloof, uncaring, suspicious, and bossy. People with a benevolent sense of humor—which is more self-directed, poking fun at their own foibles—are perceived as being friendly, open, and considerate." Even the awkward moment, such as dropping your papers or fumbling for words, can provide an occasion for some benevolent humor.

Aside from worrying whether or not your humor is in good taste, there's nothing to stop you from incorporating humor in training presentations. And, anyone can be humorous. "I don't believe that you either have it or you don't," Kushner says. "Everyone has it to some degree." For trainers giving prepared presentations, prepared jokes make the most sense. If the presentation is offered repeatedly, a trainer will know which jokes are hits and which ones should be changed.

But although prepared jokes can be effective, Baum says that "spontaneous humor tends to be most effective." Not every trainer is nimble and quick-witted enough to use humor at will, but studious preparation can make a trainer humor-ready before entering a classroom. From experience, a trainer can anticipate situations or questions and

Humor should be built around the important points of a presentation.

prepare humorous responses that appear to be off the cuff when delivered. Ronald Reagan demonstrated the value of such preparation during the second debate of the presidential campaign last October. When asked how his advanced age might affect his performance during a second term, Reagan vowed, "I will not make age an issue of this campaign. I am not going to exploit for political purposes my opponent's youth and inexperience."

It takes work to be humorous, nothing more, Kushner believes. "The only excuse for not using humor is laziness," he says. "So what if you can't tell a joke? You can use a humorous quote to make a point. You don't need any special talent for that." Another easy trick is to make up some phony definitions that you can throw into your presentation. "Just to pace your material," Kushner says. And he offers one rule of thumb: "Don't announce the fact that you're going to tell a joke. Don't say, 'A funny thing happened to me on the way over here today.'"

Kushner doesn't accept the possibility of bombing as an excuse for not trying to lighten up a presentation. Boredom is a bomb, he says. "You don't have to tell a joke to bomb. You can do that any time you open your mouth. But if your humor is relevant, you're 80 percent home." And it doesn't matter if a joke has already made the rounds. "The only old joke is the one you told five minutes ago," Kushner says. "It's all in the analogy. If you can see a parallel between a point you're trying to make and a joke, use it."

Humor is not the exclusive property of stand-up trainers, either. The computer-based training (CBT) courses written by Gary DeWard Brown, vice president of Crwth Computer Coursewares in Santa Monica, CA, are filled with humor, even though the courses cover such mundane topics as sort/merge utilities and report generation.

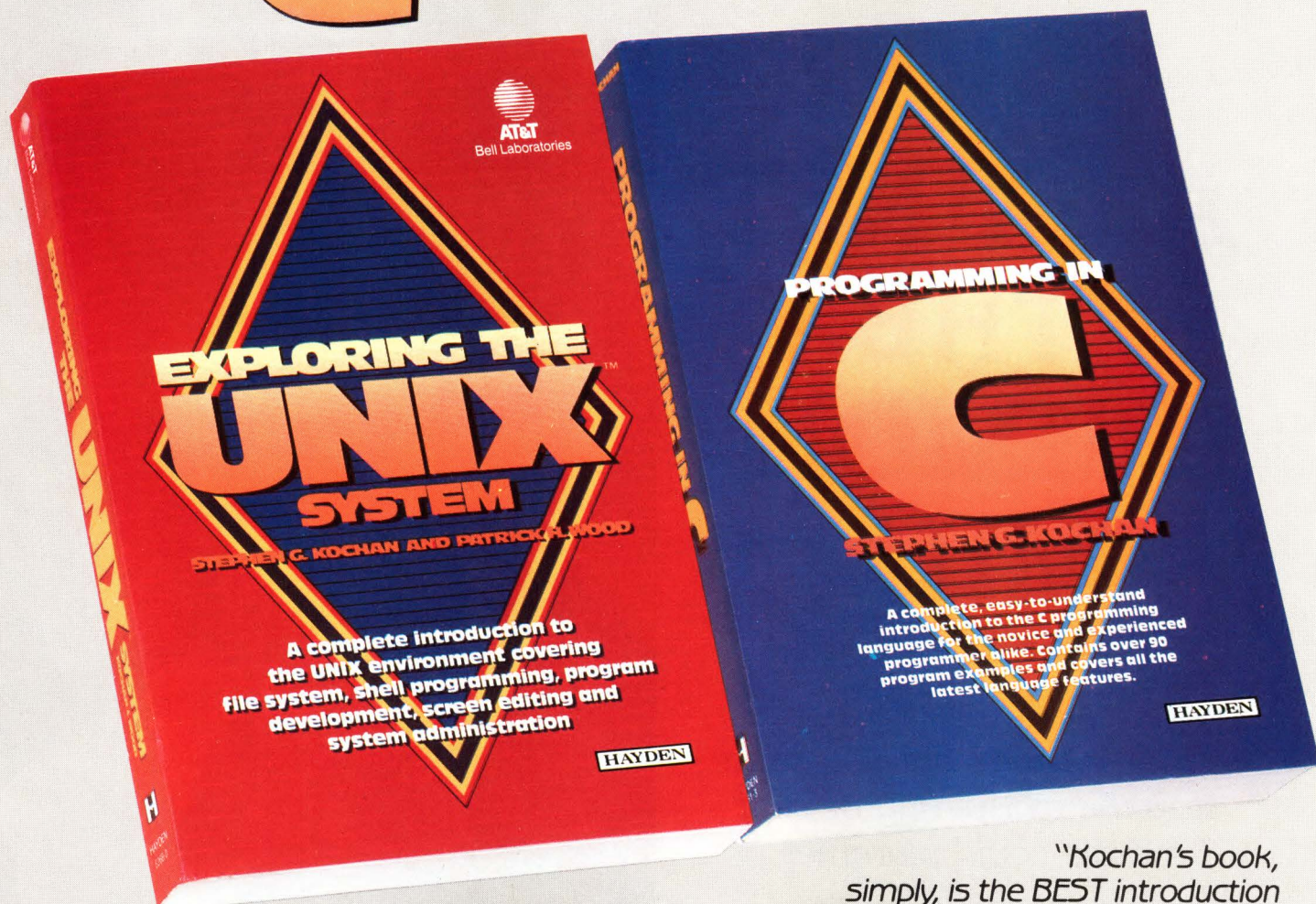
"Humor gives a human touch to a CBT course," Brown says, a touch instructors can take for granted. "You don't have nearly as much freedom to use humor in a written course as you do in a stand-up lecture, though," Brown says, "because the students are much more intent on their work." Humor can be used, then, to keep that attentiveness in perspective and in check.

Students who take Brown's courses are periodically quizzed to see if they are making progress. The quizzes are frequently multiple-choice questions, and if a student selects the wrong answer, the software will lightheartedly inform him or her of the error. "We're trying to put a student at ease," Brown says, "by letting him or her know that a mistake isn't the most serious shortfall in the world. So we wrote something that takes the sting out of having given a wrong answer. That makes learning easier."

Advanced Business Computing Inc. of Palatine, IL, eases the novice computer user's introduction to its database-management package with a sprightly tutorial diskette, Data Spectrum. The disk instructs by showing how the "ABC Cookie Co." uses the package to run its business. A user who successfully completes the training course is awarded a "cookie of achievement," which rolls out of the back of an on-screen ABC Cookie truck. Data Spectrum runs on IBM Personal Computers and compatibles and Apple II, II+, IIe, and IIfx.

Appropriate humor, whether from an individual or a pert program, can relax students, stimulate interest, create rapport, drive home a point, aid retention, and enliven your company's training program. Far from tarnishing your professional image, or labeling you as an ersatz clown, Kushner says, humor can actually enhance your professional image. "Think of the trainers on the lecture circuit. The ones with a reputation for being humorous are in demand," he says. According to David Baum, more than creating a demand for your services, effective humor offers greater rewards when coupled with competence. "There's a correlation between competent trainers who use humor effectively and their success," he says. And that's no joke. □

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AGAINST THE RUMOR MILL

There's no surefire way to silence rumors, but you must stop the whispering or staff morale could plummet.

by Martin Lasden, Western Editor

No matter how improbable, implausible, or absurd a rumor might be, it can nevertheless grow, flourish, and bedevil you. If you don't believe that, consider what has happened at Procter & Gamble Inc., the billion-dollar, Cincinnati-based soap conglomerate. Promoting products with names like "Spic and Span" and "Ivory Soap," P&G projects an image of squeaky clean wholesomeness. But for the second time in two years, a vicious, untrue rumor that alleges P&G to be in league with the devil has raged throughout the country.

Anonymously circulated fliers point out that the 13 stars on P&G's man-in-the-moon trademark can be connected to each other in such a way as to reveal the number "666"—a sure sign, the fliers insist, of the devil. Company spokesmen admit bewilderment, thinking they had squelched the rumor two years ago. But a renewed flood of phone calls pouring into the company's consumer-information department sug-

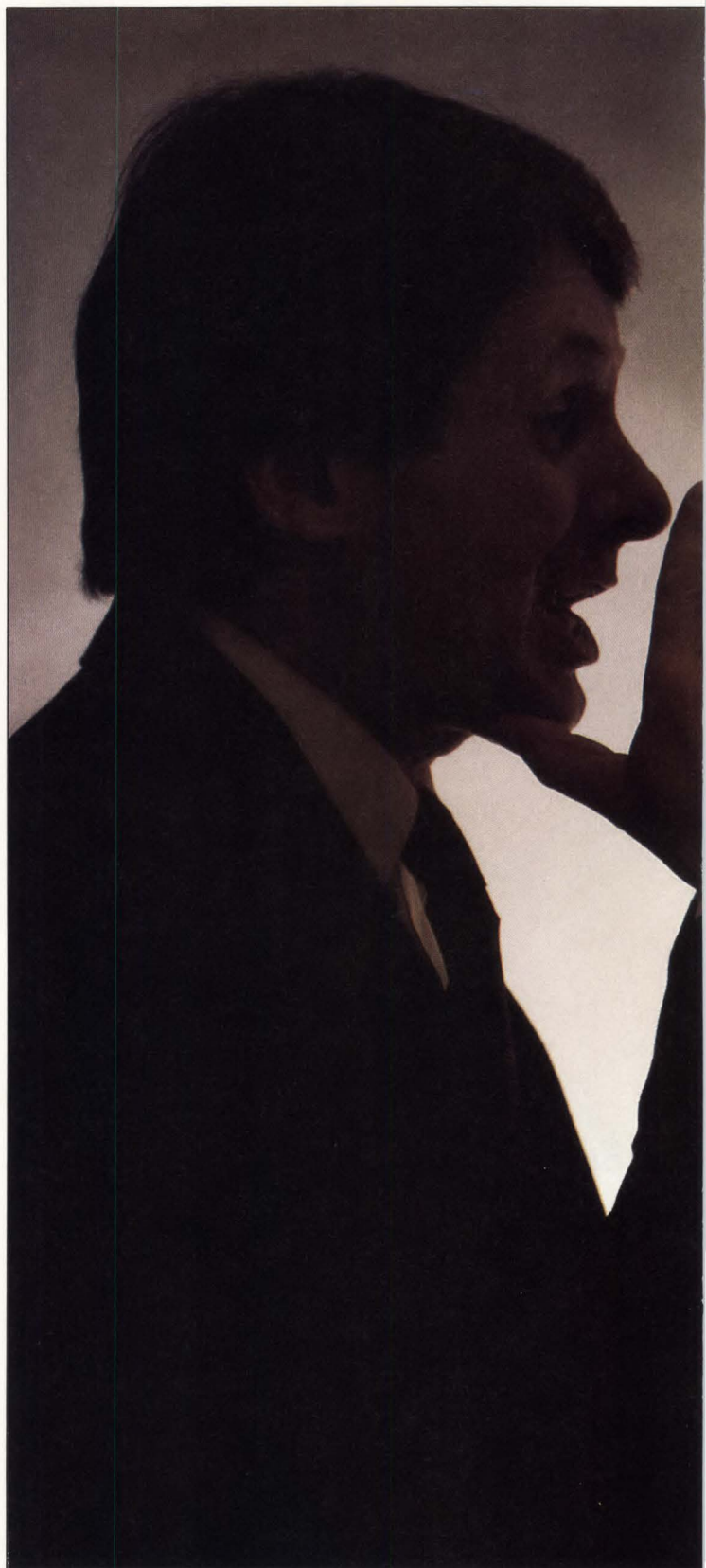
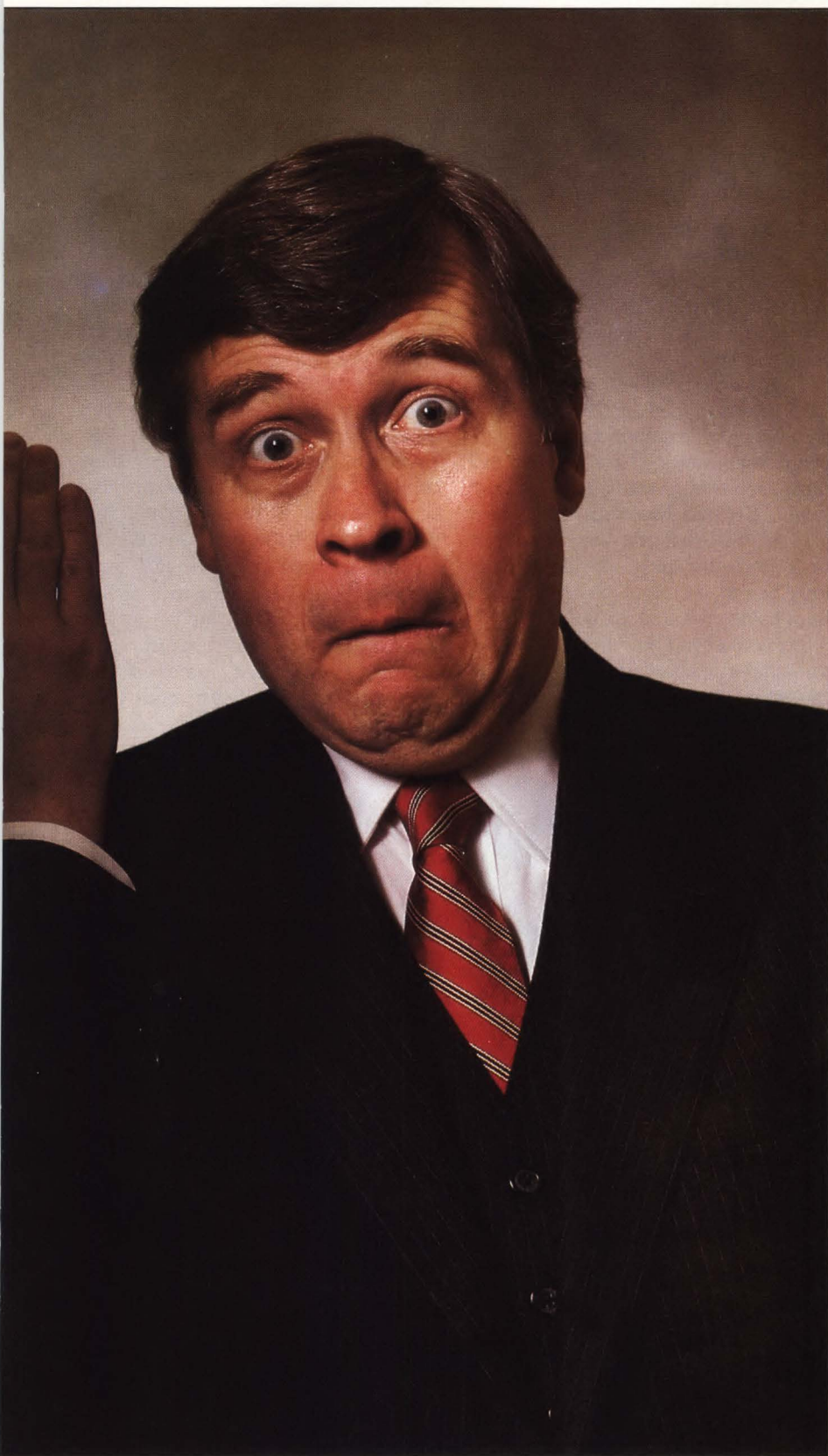


Photo by Ted Hardin



gests otherwise. "Is it true your trademark displays the mark of Satan?" callers ask. "No, it's not true," harried operators answer, explaining that the 13 stars represent the 13 original colonies. But the calls keep coming in. So many calls, in fact, that P&G has decided—for the second time—to conduct a massive mail campaign to churches around the country, enlisting the support of religious leaders like Jerry Falwell and Billy Graham and threatening libel suits against those who knowingly spread this false accusation.

Why now? Why again? Precise answers are difficult to come by because, like lightning, there seems to be an inherent element of randomness to the way rumors strike. Victims of rumors can be huge corporations or singled-out executives. Whether rumors are spurred by an intimidating technology, suspicion of layoffs, or, more personally, conjecture about sexual conduct, you must stop the whispering. Up against the rumor mill, what's the best course of action? Ignore the rumor and hope it goes away; confront it head-on and hope to snuff it out; or take some sort of middle course?

Although no surefire formula to silence a rumor has been found, psychological researchers have studied rumors and their perpetuation as reflections of human behavior. In their 1947 book, *The Psychology of Rumor* (Russell & Russell Pubs.), Gordon W. Allport and Leo Postman pointed to two variables that determine whether a rumor lives or dies: importance ("Do you know what it means if that's true?") and ambiguity ("Do you think that's really true? Where can we find out?"). The more importance and uncertainty attached to the rumor, they wrote, the more the rumor-mill fire is stoked. Thus, Allport and Postman concluded, rumors thrive in atmospheres thick with secrecy.

Throughout the 1970s, Ralph Rosnow, a researcher at Temple University (Philadelphia, PA), documented the influence of a third factor that promotes rumors: anxiety. "There seems to be a multiplicative relationship between uncertainty and anxiety," Ros-

RUMOR MILL

now says. He cites the rumor about a young boy who was castrated in a public lavatory, which distilled and highlighted racial tensions in the late 1960s, and was widely circulated throughout Detroit and spread to other large cities in the U.S. Outraged by the thinly veiled tale of racial genocide the rumor told, those who repeated it invariably made the race of the victim the same as theirs; horrified, they infused their respective racial communities with an anxiety that kept the rumor alive and, in turn, justified their fears.

Another benefit of perpetuating a rumor is the attention it draws to the teller. Repeating rumors is like saying: "I'm in the know. I'm in the middle of where it's at." Jack Levin, a professor of sociology at Northeastern University in Boston, once conducted a fascinating experiment concerning an interreligious marriage. He printed fliers inviting the student body to attend the campus wedding of Robert Goldberg and Mary Ann O'Brien on June 6. Goldberg and O'Brien were figments of Levin's imagination, and no other students had

scheduled a campus wedding on June 6. Moreover, the day that Levin circulated the fliers was June 7, one day *after* the announced wedding date. Nevertheless, 12 percent of the student body Levin surveyed claimed they had been to the wedding. Some went so far as to describe what the bride and groom wore and the limousine that picked them up. "I got so many students saying that they were there," Levin chuckles, "that I actually checked with the administration to make sure there really hadn't been a wedding." Such is the power of artificially created truths.

There is yet another comfort that rumors provide: They reinforce cherished assumptions rumormongers have about themselves. Thus, if men tell other men a story about girls and boys saved after their boat capsized—and it was actually the girls who saved the boys from drowning—it doesn't take long before the story changes to the boys having rescued the girls.

From studying how hearsay travels throughout a community, researchers

have found that a tale tends to evolve in three distinct stages. In the first, "leveling," the story gets shorter and extraneous or uninteresting details drop out. Then "sharpening" occurs, in which certain aspects of the tale are accentuated and exaggerated. Lastly, "assimilation" takes place; the story changes to fit the storytellers' expectations.

This suggests that rumors are not just quirks of the social milieu. Rumors serve real needs and provide definite payoffs where there's anxiety, secrecy, or a lack of information about an important issue. And therein lies the danger; rumors are so powerful and seductive that they are perpetuated with relish. During the Boxer Rebellion, American General Smedley D. Butler, upon hearing rumors of an impending ambush as he marched U.S. troops toward Peking, observed: "I'd rather fight an entire army than battle an idle rumor."

More recently, an executive from Chrysler likened a rumor to a snake. "Just when you think you've got the snake killed, part of it starts moving," he said. When that rumor snakes through the rank and file employees, how can a corporation neutralize its venom? One approach to defusing a nasty rumor is to meet it head-on with a denial. That was the strategy an East Coast utility company used some years ago when new computer technology was introduced. Out of the anxiety created by the impending change, the following rumors were born: Men 60 years of age and those with 40 years of service would be asked to retire at 85 percent of their retirement pay; 1,000 men would be laid off in the immediate future; and after the technology was in use for one year, all married women would be asked to leave.

To debunk these divisive rumors, top managers issued categorical, company-wide denials. By circulating official refutations of these rumors, the management took a direct and decisive step—and the strategy paid off. The rumors were defused before they could do serious harm.

But there are other, more subtle, methods that can be just as effective when you're up against the rumor mill. For example, maintaining a corporate hotline employees may use to check



Photo by Gelman/Gamma Liaison

William Agee's overstated denial of rumors of his alleged affair with Mary Cunningham boomeranged into a national news item. Agee, who was then chairman of the Bendix Corp., and Cunningham are now wed.

RUMOR MILL

the veracity of rumors. At McGraw-Hill Inc., the publishing conglomerate in New York, Peter Haas, director of corporate communications, mans one such corporate "rumorline." Says Haas, "I'm a live voice, not a taped message," and he's found that the "horse's-mouth" approach goes a long way toward taking the sting out of rumors.

Bill Downs, senior director of MIS/dp at Four Phase/Motorola Inc., the minicomputer manufacturer in Cupertino, CA, once used the "trickle-down" method to successfully subvert rumors of a pre-Christmas layoff. Instead of issuing a straightforward denial, Downs informed staffers at one of his regularly scheduled meetings that there were no plans for a layoff and instructed them to spread the word. After a few days, he was able to confirm his plan's success by conferring with his confidants among the departmental rank and file.

The distinct advantage to an approach like trickle-down is its subtlety, for a denial issued too visibly or force-

fully can itself fan the flames of speculation, spreading the rumor to those who haven't yet heard it. The danger associated with the subtle approach is that it may perpetuate the ambiguity that breathed life into the troublesome rumor in the first place. Ultimately, says Ralph Rosnow, it comes down to a judgment call. "No scientific formulas here," he declares. "It's purely a matter of intuition." For rumor-busters, the decision to make either a direct or subtle confrontation is critical—and there's much room for second-guessing.

For example, take the P&G case. When P&G first decided to defuse the Satan rumor in the summer of 1982, there was much debate over whether the giant soap-maker had overreacted. The debate made the front page of *Advertising Age*, the nationally circulated trade paper, under the headline: "P&G rumor blitz looks like a bomb." Citing a poll on the issue, conducted in association with SRI, the think tank based in Menlo Park, CA, the paper argued that

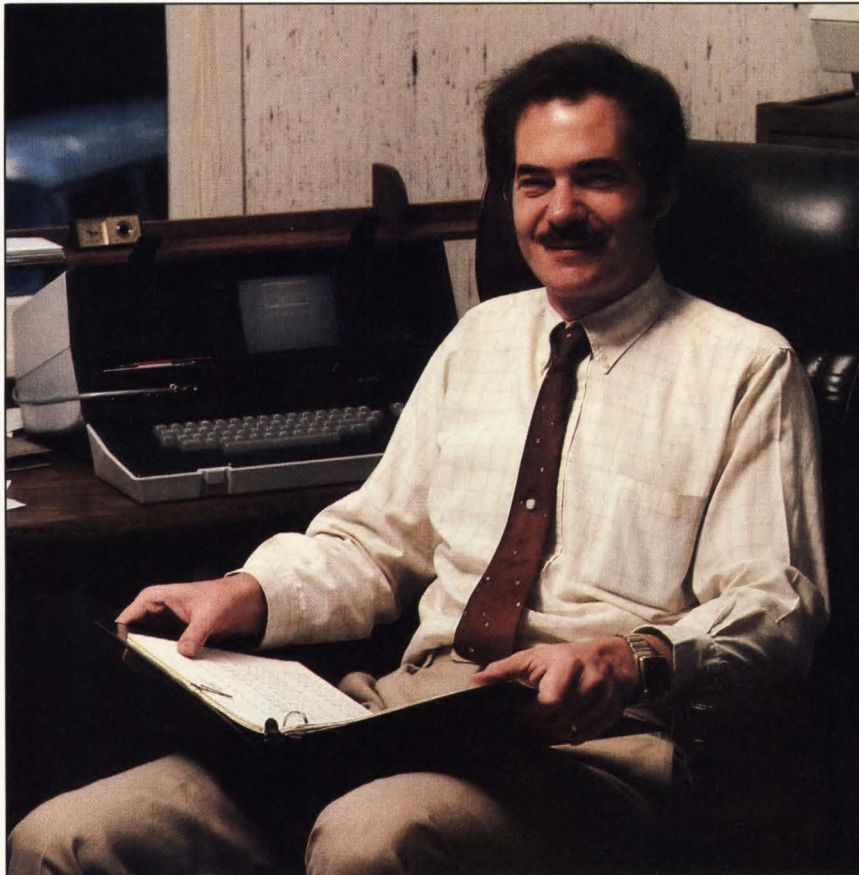
not only was P&G's public-relations campaign largely ineffective, but that because most people didn't know which products were made by P&G, there was no good reason to launch the campaign in the first place. Spokesmen for P&G took strong exception to the article's conclusions, arguing that 15,000 phone calls a month from consumers calls for taking decisive action. And they're hoping that this time their campaign will work.

In 1980, as chairman of the Bendix Corp., the diversified equipment and aerospace conglomerate headquartered in Southfield, MI, William Agee opted to openly counter the rumor that he was having an affair with Mary Cunningham, who had advanced rapidly to become vice president of strategic planning at Bendix. According to Cunningham's just-published book, *Powerplay: What really happened at Bendix* (Linden Press/Simon and Schuster, 1984), the occasion was Bendix's annual shareholders' meeting at the corporation's headquarters, which was also attended by all 600 headquarters employees.

Agee had a democratic style, Cunningham writes, and he wanted to answer any questions his employees asked—including those about his alleged affair with her. Agee knew news reporters were present, but, according to Cunningham, did not let their presence inhibit what he said. "I've been told by many people, and I know that it's buzzing around," Agee said, "that Mary Cunningham's rise in this company is very unusual and is due to a personal relationship that we have. Her rise in this company is unusual because she's a very unusual and talented individual. But her rapid promotions are totally justified. At the same time, it's true we are very, very close friends, and that she's also a close friend of my family. But that has absolutely nothing to do with the way that I, others in this company, and the board of directors evaluate her performance. Next question."

Headlines the next day rang out with the news that Bendix's chairman had taken pains to deny the rumor, thus creating a sensation that eventually led to Cunningham's resignation. Would

(Continued on page 80)



Adam Osborne took matters into his culpable hands when he deliberately lied to the press to subvert rumors about Osborne Computer Corp.'s imminent demise.

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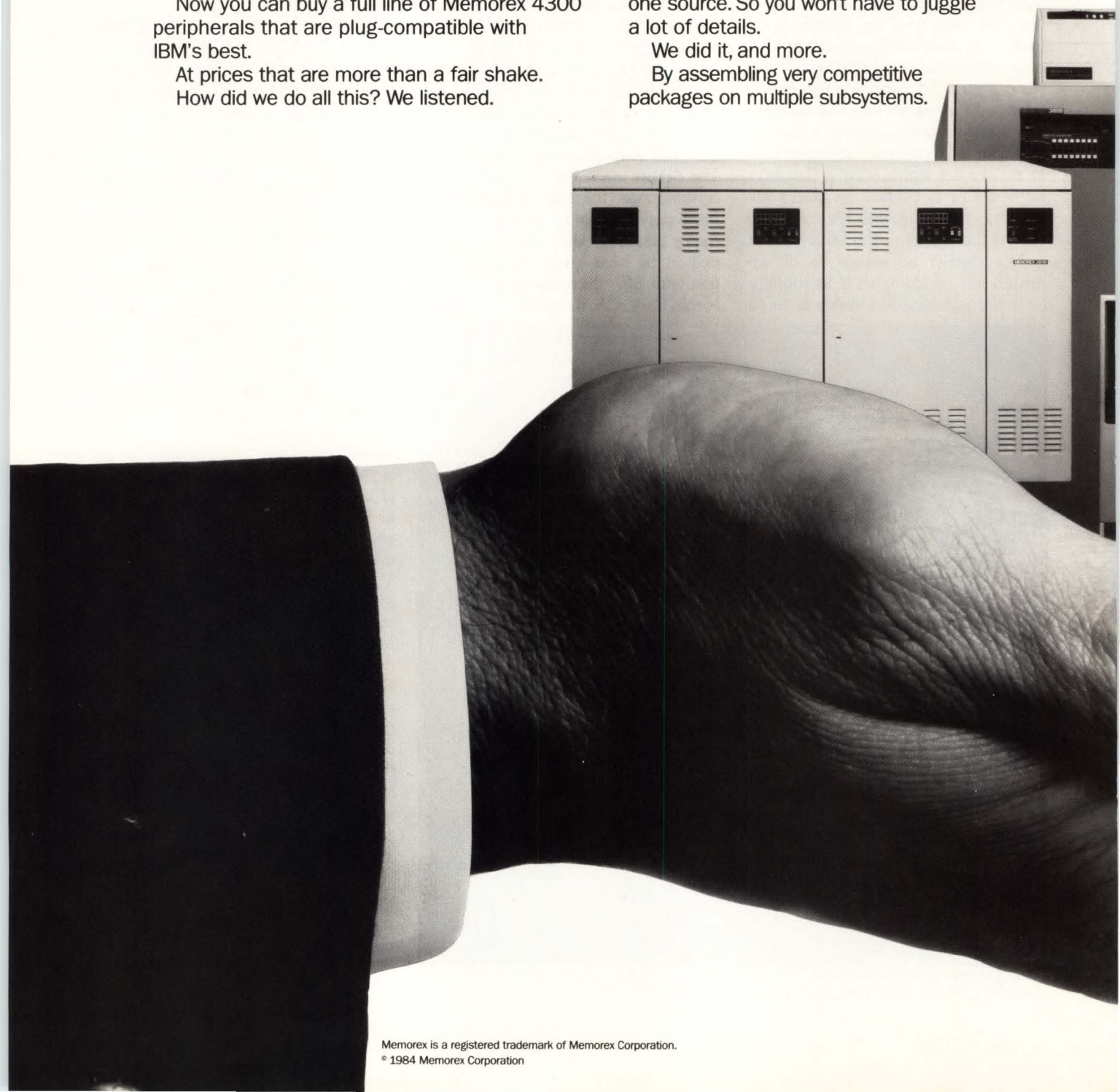
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RUMOR MILL

(Continued from page 77)

the whispering have stopped if Agee had just kept his mouth shut? Cunningham thinks not. Agee's enemies would have seen to it that the rumor was kept alive, she claims. "What's so vicious about a rumor like this," Cunningham observes, "is that you can never really disprove it. There's just no way to open your bedroom to the world."

Cunningham joined Seagram's Inc., NY, the world's largest distributor of spirits, after resigning from Bendix, and there, again, rose quickly to become vice president of strategic planning. She and Agee have since married and, together, run Semper Enterprises, a venture-capital firm in Osterville, MA.

Rumors like the one that Mary Cunningham slept her way to the top are "a no-win situation," says Douglas Timberlake, former director of public relations at McDonald's Corp., the fast-food giant headquartered in Hinsdale, IL. "You're playing strictly for a tie." In 1979, Timberlake waged war against two highly improbable rumors: that McDonald's founder, Ray Kroc, had contributed company profits to San Francisco's Church of Satan; and that the fast-food chain was putting worms into its burgers.

As a veteran of these two campaigns, Timberlake, now vice president of communications for Weber, Cohn & Riley, a Chicago-based marketing and public-relations firm, speaks as an expert on the art of rumor control. When rumors surface, he says, there are three basic steps to take, hoping that each step will avoid the next. Here's the progression:

- **Containment.** The first line of defense. Flat and emphatic denials should be directed at any employee who has heard the rumor. If an individual questions the truth of a rumor warning of layoffs, for instance, deny the false rumor and ask how he or she heard it. Try to trace the rumor to its source. But, where no questions are asked, no mention of the rumor should be made. If the rumor can't be traced to its source, and indications are that it's continuing to spread, then it may be time to escalate to step two.

- **Deflection.** Try to contradict the

rumor on a broad scale without repeating it to anyone who may not have already heard it. Using the layoff-threat rumor as an example, deflection might mean circulating information about how well the corporation is doing or how crucial your employees' continued services will be. There should be no al-

lusion to the rumor in this step.

- **Full-scale denial.** Timberlake says this is the riskiest step you can take. But, if the first two steps prove ineffective, and the rumor continues to spread, it's time to make a straight, flat-out denial to all those who have heard it and those who may yet hear it. When denying a

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CIRCLE 41

RUMOR MILL

rumor, hope that the cure is not worse than the disease. "Employees are selective about what they hear," Timberlake points out, "and they could get it wrong. They could hear the rumor, but not hear or believe the denial."

But what if the rumor is true and confirms the rumormongers' worst

fears? The glib response is that honesty is the best policy. Well, is it? "I'm not so sure," admits Ephraim McLean, associate professor of information systems at the University of California's Graduate School of Management in Los Angeles. "Sometimes the malaise that comes from being kept in the dark is prefera-

ble to the active resistance that comes from enlightenment." Faced with the imminent layoff, relocation, or personal scandal, it's no wonder executives hedge, dodge, and tell outright lies.

Can the executive who deliberately lies live down the consequences? Adam Osborne, president of Paperback Software International, Berkeley, CA, says in his book, *Hypergrowth: The Rise and Fall of Osborne Computer Corporation* (Idhekkethan Publishing Co., 1984), that he purposely lied to the press on one occasion.

"Eric Larson, a reporter from *The Wall Street Journal*, was getting perilously close to discovering the true depth of Osborne Computer's problems," Osborne writes. "Had Larson published his findings in early July, his story would have dimmed the still-bright prospects for a private stock offering. It was imperative to draw Larson away from the facts, thereby giving the company president time to complete a planned private stock placement. I carefully devised a story that was plausible and made good copy, by representing Adam Osborne in a brash hero-in-penitent pose. Larson bought it and ran the story on the front page of the business section.

"*The Wall Street Journal* story was not true. It was, in fact, the single and only time I have ever deliberately lied to the press." Reflecting on the credibility he's lost, Osborne says somberly: "It's a hell of a price to pay, so be damn sure that the consequences of telling the truth are worse." Osborne maintains that for him, on that occasion, lying was a matter of fiscal survival.

Rumors bring to mind the petty, libelous, malicious side of human nature. But not all rumors are destructive, and all rumormongering is not indicative of a sick organization. Just as rumors reflect our worst fears, they also reflect our most fervent hopes—of prosperity, promotions, and new challenges. And although perpetuation of an untrue rumor indicates a lack of communication within an organization, the total lack of rumors is even worse—a sign of employees' disinterest in the organization. Thus, the rumor mill is not just something to fight against; it can also be something to be thankful for. □

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HALTING NETWORK INTRUDERS

Human frailty, not technical inadequacy, may be the "open window" through which intruders are entering data-communications networks.

by John Seaman, Data Communications Editor

Along with its assets, sophisticated data communications provides its own adversary: the potential to intercept data and voice communications for only a few dollars. The very windows through which organizations see greater productivity, lower costs, and faster response times are the windows through which intruders can enter. The cost of intrusion is down, but the potential "take" has increased. Advanced systems, obtained at relatively little cost, can gain access to databases by masquerading as authorized terminals. What's more, not many states have laws against computer crime, and there is no federal law on the books, although legislation has been proposed.

Because large banks and insurance carriers often transmit high-value transactions via communications channels,

they are especially vulnerable to security breaches. Manufacturers and retailers are vulnerable too; they transmit sensitive product and sales information "over the wires." Finally, governmental agencies transmit confidential data affecting every citizen.

But according to Donn Parker, senior management-systems consultant in the computer-security program at the SRI International Inc., Menlo Park, CA, there are two kinds of vulnerability: poor technical controls and poor human controls. Electronic surveillance and interception of sensitive or proprietary data, only two of the technical threats that network users must guard against, can occur in a number of ways.

● Intentional efforts to obtain financial or proprietary information from competitors.

(Continued on page 84)



Photo by David Wagner



(Continued from page 82)

- Clandestine attempts to access financial or other confidential data from government agencies that have contacts with corporations.
- Illicit access to confidential computer databases.
- Accidental or intentional destruction of computer databases.

Wiretapping, a fact of life for law-enforcement agencies, can also be used by "white-collar" criminals. With telephone communications, a physical tap must be made at some point along the line. However, microwave transmissions can be tapped by monitoring transmissions anywhere along the path of the microwave-radio link. Such electronic wiretapping is almost completely undetectable and unstoppable.

Private lines always extend over the same route, transmissions facility, and circuit. Likewise, private microwave or satellite private lines always take up the same segment of the radio spectrum. Consequently, once a perpetrator locates the frequency of the dedicated circuit, electronic-eavesdropping gear may easily monitor every message sent via that circuit.

A perpetrator encounters greater difficulty with messages carried on switched private lines. If the perpetrator wants to "tap" all messages to and from a particular user of switched private-line services, the task is very similar to that of an eavesdropper on dedicated private lines, except that many more lines must be monitored and the eavesdropper must also use a screen-

ing process to target the data. Still, when eavesdropping on the dialup network and on switched private lines, a perpetrator can easily access telephone calls of interest, because each call is preceded by a signal that identifies the telephone number. The perpetrator can use a computer to look for key words, names, subject titles, or telephone numbers. Even a personal computer can carry out such searches. To deter such eavesdropping, some corporations—notably banks—install expensive systems.

Another concern is more nebulous for businesses. Most electronic equipment, such as word processors, facsimile and Teletype machines, personal computers, and so on, "leaks" electronic pulses. This radio-frequency interfer-

DATA-ENCRYPTION SAMPLER

Vendor	Product	Functions	Price	Circle
Analytics Communications Syst. (703) 471-0892	Sherlock ISM	Authentication; File security Line security; Includes DES chip 75 bps to 19.2 Kbps	\$1,995	401
Collins/Rockwell (714) 850-2677	DDC-156A	Line security; For microwave 1.544 to 2.048 Mbps	\$20,000	402
Com/Tech Syst. (212) 594-5377	U102	Line security 75 bps to 19.2 Kbps	\$1,450	403
Datotek (214) 241-4491	DKG 64,000	Line security; Includes DES chip Up to 64 Kbps	\$2,000	404
IBM (914) 765-3612	3845	Line security; Includes DES chip 110 bps to 19.2 Kbps	\$2,675	405
Industrial Resource Engineering (301) 561-3155	IRE Scrambler	Line security; Includes DES chip Up to 9,600 bps	\$395	406
Jones-Futurex Security Systems Div. (916) 966-6836	Encryptor 305	Authentication; File Security Line Security; 300 to 9,600 bps Includes DES chip	\$1,595	463
M/A-Com Linkabit (619) 457-2340	LC76CF	Line security; Includes DES chip For satellite 110 bps to 112 Kbps	\$6,250	407
Paradyne (813) 530-2000	2811-01	Line security; Includes DES chip 50 bps to 64 Kbps	\$2,900	408
Practical Peripherals (818) 991-8200	DES 2000	File security; Line security Includes DES chip 300 bps to 19.2 Kbps	\$459	409
Racal-Milgo (305) 476-4810	Datacryptor II	Line security; Includes DES chip 50 to 9,600 bps	\$2,100	410
Sytek (415) 966-7300	PFX	Authentication; Includes DES chip Works with LANs; Price includes cpu & 50 log-on devices Any LAN speed	\$30,750	411
Technical Communications (617) 862-6035	Cipher-X5000	Authentication; Line security 30 bps to 64 Kbps	\$3,000	412
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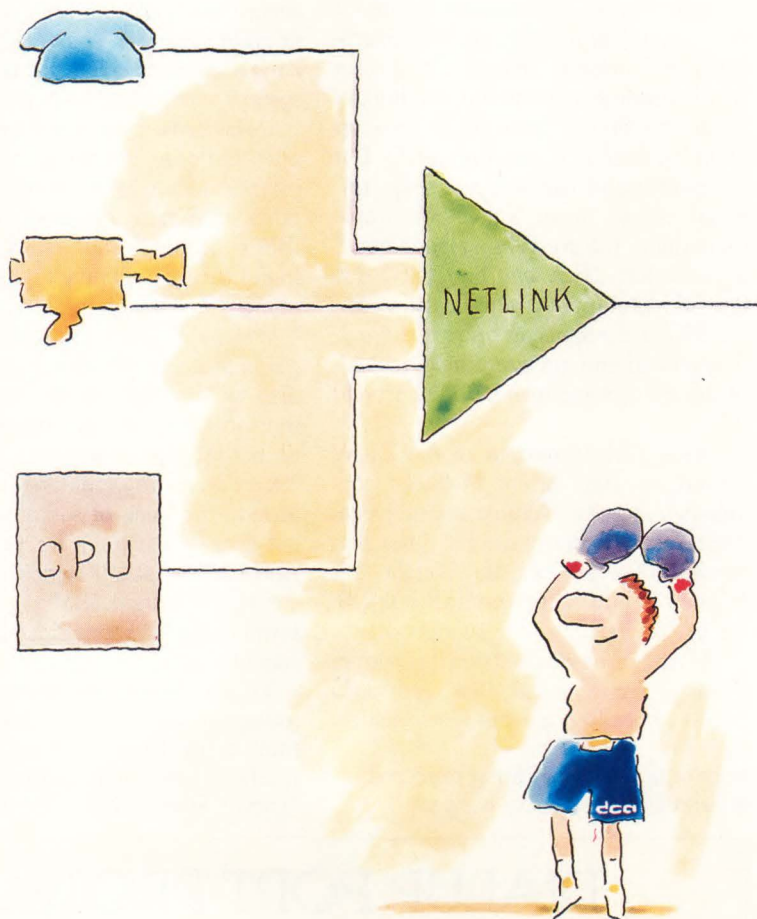
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CIRCLE 42

ence (RFI) can be intercepted and information accessed if the eavesdropper has access to enough technical resources. The government has come up with a method—called “Tempest”—to assure that detectable RFI emanations cannot escape. This protection is available, through carefully controlled channels, from the National Security Agency. If approved by the NSA, products may be called “Tempest-protected.” Although Tempest protection can be expensive for the user, eavesdropping on Tempest-protected equipment is prohibitively expensive for criminals.

Donn Parker has reservations about the vulnerability of RFI and the practicality of Tempest. “Where you have a lot of computer equipment in a limited space, it’s almost impossible to pick up anything useful by monitoring RFI. But if a perpetrator can isolate a single terminal away from other electronic equipment, the crt will sing like a bird,” says Parker. “But why buy \$200 dollars of wiretapping equipment when, for \$50, a criminal can bribe a computer operator and get everything desired, nicely printed and with a ribbon around it.”

Dixon Doll, president of the DMW Group, an Ann Arbor, MI-based consultancy, agrees. “Almost any technical approach to security will fail if the personnel involved can be bought off. Human failure is the greatest vulnerability,” he says.

What can be done about the human threat? Some steps that are well-known, but often not put into practice, include:

- Careful hiring and firing practices.
- Establishing codes of conduct.

- Establishing corporate policy so motivation to support technical controls comes from the top down.

- Including security considerations in salary and performance reviews.

One very important safeguard where human control is a factor is the password. Many large organizations use passwords that are conjunctions of personal identification numbers plus an authorization from someone at the highest security level. Doll believes other forms of passwords are growing in importance—for example, the user’s own voice. “Voiceprints can be quite secure and can only be compromised at great expense. The only problem is, if the authorized speaker has a cold, the system won’t work,” he says.

Passwords may be compromised, but that’s a relatively sophisticated method of intrusion compared to another common occurrence at IBM. IBM’s security staff, says Doll, has found secret papers left lying on desks at night. “Although this kind of lapse by a manager won’t immediately affect pay scales or promotions, repeated failures of this kind will be considered on the same level as, for example, a lack of respect for superiors,” says Doll. “Such a record would be an albatross around the neck of someone trying to get on the fast track for promotions.” And such lapses, if significant enough, can result in firing. IBM has a record of terminating personnel for security reasons, he says.

Despite the most elaborate security measures, one of the most effective tools of malicious hackers and phone freaks is “spoofing,” sometimes called “social engineering.” Loose talk in

cocktail lounges could drop key passwords or facts. Donn Parker advocates “spoof-proofing” your trusted staff so they will not reveal sensitive information to unauthorized persons. “At some level,” says Parker, “everybody is digging out information about everybody else.” But it’s important to establish what is ethical or legal.

Parker emphasizes that employee-assistance services are very important. “This includes programs to assist in cases of drug abuse, alcoholism, personal financial problems, and so on. We include these services in computer security,” he says. Every human-resources department would do well to develop these services as resources. But, as Parker puts it, “Every manager is responsible for securing the assets of that department, and every manager has a role to play in invoking prudent safeguards.”

For most businesses, the real enemies are individuals with limited resources: organized crime, white-collar criminals, and malicious hackers, says Parker. “We have 1,400 instances of computer crime in our files, dating back 15 years. Only two of these instances involve wiretapping or illicit technical eavesdropping,” he says.

“Technical eavesdropping, for example, wiretapping or listening in on microwave transmissions, can be addressed by the most powerful safeguard we know of for data transmission: encryption. But, we’ve been unable to find any evidence of loss outside of international espionage,” says Parker.

Nonetheless, proponents of technical methods believe that the best tech-

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Penril Datacom (301) 921-8600	Auto-Data 300/1200S	1 line	\$750	460
Tact Tech. (215) 569-1300	Multisentry	Up to 128 lines	\$110,000	461
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CIRCLE 43

NETWORK SECURITY

nique for ensuring the secrecy of data transmissions is cryptography—a technique of encoding or transforming data in such a way that it becomes completely useless to an outsider. Only a user with the ability to translate the encrypted message can read it. Cryptography can ensure an extremely secure level of data transmission and prevent the most determined adversary from extracting information from communications channels.

Cryptography can also prevent an opponent from inserting false data into the channel and from modifying valid messages in order to inject false or misleading information. When authentication is used, a message may be transmitted in clear text. The legitimate recipient will know if the message has been modified or otherwise tampered with, or if the whole message is bogus. The recipient will not know, however, if the message was intercepted.

The most used encryption method is based on the Data Encryption Standard (DES) of the National Bureau of Standards (NBS). DES mandates a sequence of transformations and substitutions to be imposed on a block of data, all determined by a user-specified secret key. Confidential data processed in this way cannot be decoded without access to the key that was employed in coding. This key makes possible more than 70 quadrillion combinations.

The DES algorithm is used in some very big encryption systems. The New York Clearing House, in Manhattan, is the main funds-transfer clearinghouse for 133 of the largest banks, including San Francisco-based Bank of America, Chase Manhattan, Manufacturers Hanover Trust, and Los Angeles-based Security Pacific National Bank. According to George Thomas, vice president of systems development, the Clearing House processes over \$280 billion in

transactions every day. An average transaction is worth more than \$3 million. Says Thomas, "Our primary purpose in implementing authentication with the DES chip is to discourage intruders. Our member banks would rather be safe than sorry."

Thomas' technical-services group also employs the Sherlock Information Security Module (ISM) from Analytics Communications Systems, Reston, VA. The Sherlock ISM is a free-standing, single-line security device that prevents unauthorized tampering with communicated data. The ISM can encrypt/decrypt and authenticate information between terminals, satellite processors, and host computers over public or private facilities, and complies with Ansi X9.9, the Financial Institution Message Authentication Standard (FIMAS). This last accreditation was an important factor in his selection of the Sherlock ISM, says Thomas.

Thomas has responsibility for more than 250 ISMs, one at each member bank and 12 online at the central Manhattan site, plus several spares. Reports Thomas, "The impetus for purchase of the ISMs came from our managing committee, made up of representatives of the largest member banks. We've had no evidence of attempted incursions, although there have been some honest errors. In such cases, the money is always returned by the member bank. Our books balance perfectly." Thomas adds that his group uses only leased lines, which are inherently safer than dialup lines.

"We wanted to stay ahead of the problem," says Joan Reynolds, vice president and data-security officer at Chemical Bank, New York. "We didn't want to start encrypting data *after* a disaster happened." To guard against such a calamity, Reynolds' group acquired four Datacryptor II data-encryption devices from Racal-Milgo for use on Chemical Bank's links to the Swift international electronic-funds-transfer network. Transactions on the Swift system average over \$3 million each.

Reynolds points out that some of the traffic over the encrypted links is peculiar to banks, while other traffic is more generally administrative in nature, and



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THE PORT ALTERNATIVE

An approach to network security that is less costly to the user than data encryption is dialup port protection. Tact Technology Inc., successor to IMM Corp., offers the Sentry line of security devices for telephone-accessed computers, which performs this function.

Tact's product line includes Multisentry, Computersentry, and Microsentry. Multisentry, which handles up to 128 phone lines simultaneously, is designed for large users. Installed on the incoming line in front of the modem at the computer site, Multisentry provides access only if the correct digital code is entered. In one variation, all calls are intercepted by a lifelike, synthesized voice, which requests the user to enter the private code number. The telltale modem tone is not heard until a valid code is entered. Unauthorized users don't know whether they have reached a computer site or simply someone's Privacode-equipped personal line.

In another variation, Multisentry will call back the caller to verify legiti-

macy, eliminating the possibility of fraud. The number called back may be either a single preprogrammed one, or Multisentry may request the caller to restate his or her number to verify the legitimacy of the given number before the callback is made.

Multisentry accepts codes of up to ten digits entered either by Touch-Tone or voice. When the code is voice-entered, Multisentry can be accessed from any phone, Touch-Tone or rotary dial.

Multisentry's alarm features are said to thwart the most sophisticated intruders, including those with their own code-cracking computers. And, in high-security applications, Multisentry can be instructed to shut down the line.

Secure Access Multiport (SAM) from Leemah also monitors up to 128 lines. As if it were an automatic electronic watchman, SAM answers all calls to the database (if it detects no malfunction in the system). But it calls back only authorized sites—potential criminals at unauthorized loca-

tions can't access the database.

Within 30 seconds, SAM will answer each call, but without admitting an acknowledgment tone (which might indicate that a database had been reached). After receiving the correct six-digit numerical codes, SAM emits the acknowledgment tone and disconnects the line. SAM then searches its code directory for the phone number of the authorized location and calls back. The user at the authorized site enters a one-digit connection code that permits entry into the database through the modem. If the incoming call was placed from an unauthorized site, a quick call back warns the real holder of the code of the break-in attempt.

Remote users who wish to access the database via SAM can use rotary-dial phones to enter the code numbers, but only via Touch-Tone transmitters, auxiliary devices that attach to rotary-dial handsets and transmit the necessary tones. Such transmitters are sold by Buscom (Santa Clara, CA) for under \$60.

could be characteristic of any large business operation. "In the first category, we have financial information. In the second category, we have message and other administrative information which relates to the financial data. This latter data would not be too different from that in a manufacturing operation, for example," she says.

Reynolds believes encryption is important, but not to the exclusion of common-sense safeguards. "All the technical controls in the world aren't going to eliminate security threats," she says. "You have to be careful whom you hire and fire. Managers should be trained to look for individuals who are having personal problems. There's a lot more to security than the DES chip."

George Thomas agrees: "The easiest way to compromise our system would be to pay off a clerk. However, there are extensive security checks on each member bank's premises to discourage unauthorized use. At our central site," continues Thomas, "all our

programmers are physically excluded from access to the EFT-production machines. Executives have access, but our



An IRE Scrambler (a data-encryption device) at a word-processing center encrypts documents as information is transmitted through a modem to a remote office.

operations personnel check on this. And the operations personnel receive the highest level of security check. We've had no fraud at our member banks or at the central site since the system first went online in 1970."

Thomas adds that NYCH has insurance protection against fraud on the part of any internal personnel, including executives such as himself, but that the actual online EFT transactions are not covered. "Such coverage would be too expensive, considering the dollar amounts involved," he says. "The insurance companies did not push us into authentication. The government was a factor, however."

Another organization with a different range of encryption responsibilities and needs from banking organizations is the federal Nuclear Regulatory Commission (NRC). According to Duane G. Kidd, chief of the NRC's systems-security branch, the NRC selected the Paradyne Info-Lock Models 2811-01

(Continued on page 93)

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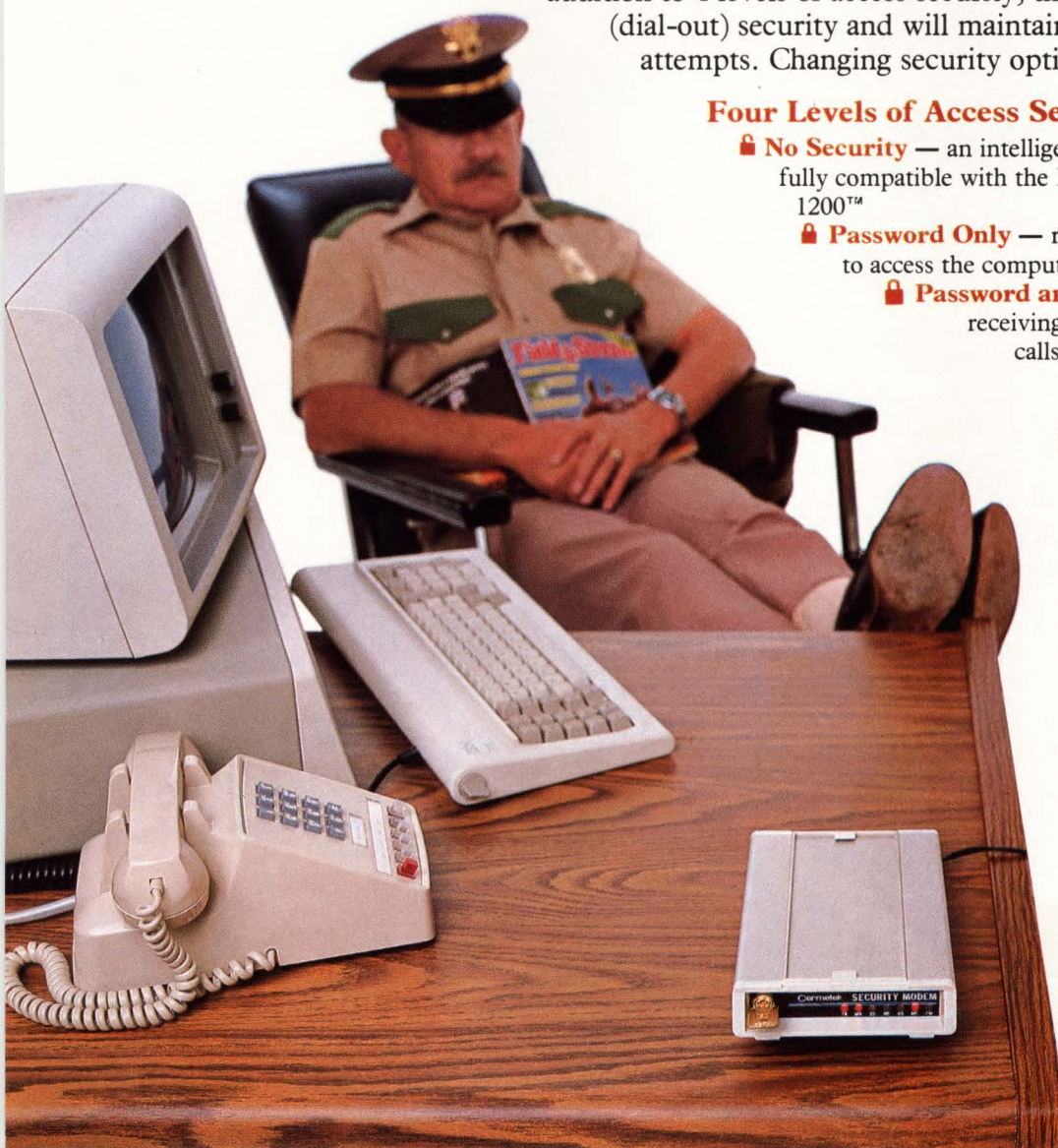
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(Continued from page 90)

and 2811-03 to provide network protection. The Info-Lock units are being used in word-processing and electronic-mail operations.

The NRC has IBM Displaywriters and 5520 shared-logic word processors (the 5520 is a hybrid wp/computer system supporting as many as 36 workstations). Says Kidd, "The Displaywriters are used in a straight dedicated network. Calls coming in are not usually vulnerable to dialup invasion because they are person-to-person, and the speakers usually recognize each other before beginning to transmit data. Of course, we remain vulnerable to microwave eavesdropping, so encryption is necessary."

The IBM 5520s have a telecommunications capability and have priority controls, involving time of day and other message restrictions," says Kidd. "But an invader might be able to read the contents of electronic mailboxes if we didn't have encryption. We tried to invade them repeatedly through the dialup system. Incursion was impossible. After three unsuccessful attempts to invade, the unit will disconnect the line. We're satisfied that we have a high level of protection and that no power short of a major foreign government could access our data."

Why is the NRC taking such dramatic measures to protect its data? "A lot of proprietary information is passed along our network regarding license applications," says Kidd. "That information may include design information, output ratings, and discussions of how power-station owners conduct business." The NRC is also responsible for oversights at these plants, and can levy fines of up to \$125,000 per day. Deliberations on possible fines are obviously sensitive. "Among the individuals who might be interested are investors who want to get a jump on the market," says Kidd. "You'll recall that Washington Public Power (Richland, WA) defaulted on \$5 billion worth of bonds in connection with an NRC decision. A lot of investors would have liked to know about that beforehand."

All NRC personnel are also screened according to U.S. Department of Defense procedures, says Kidd. "And all

the contractors with whom we work must make the same type of clearances for all their personnel. We take no chances," he says.

Data encryption is an option for many large users. You may never be able to cost-justify the expense in terms of incursions repelled, but you'll sleep a

lot better at night knowing your organization is protected. Not too many disasters have come to light (there's reason to believe some have never been disclosed), but it would only take one such crisis to end your career. It's better to be prepared than to be a possible "fall guy." □

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WHO PICKS UP THE INFO-CENTER TAB?

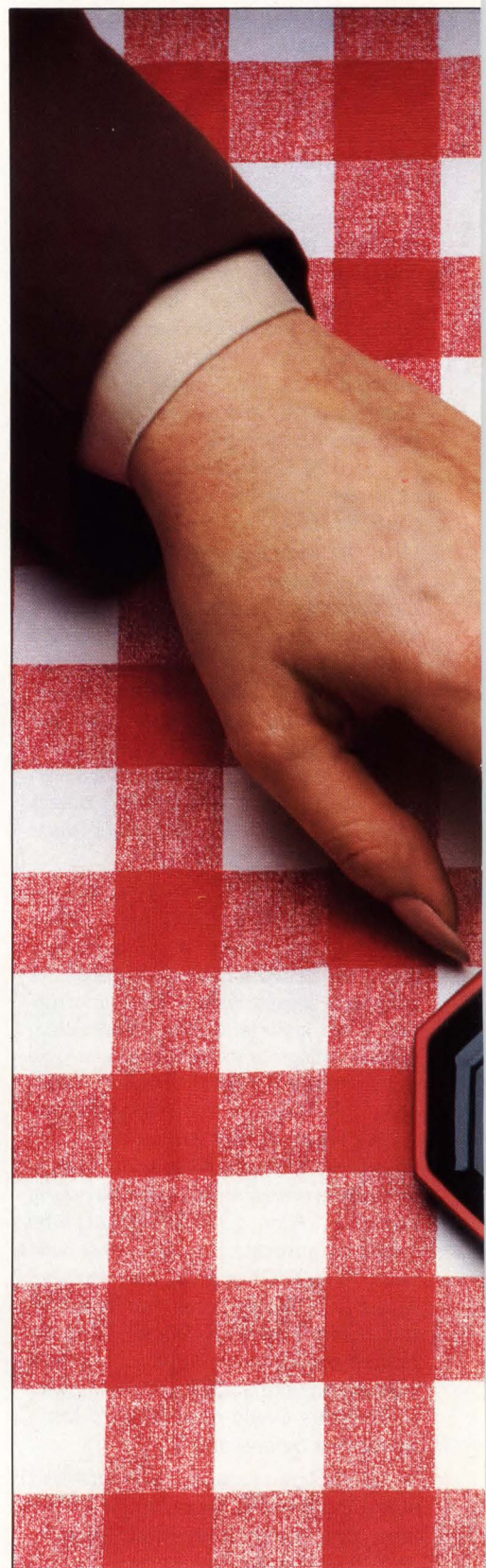
To charge forth, information centers have to charge back. Here's how they do it.

by Rick Cook

Why should you pick up the tab if you don't even know what you've bought? And if you can't itemize a bill, how can you justify it? Among information managers, these questions and even the concept of the information center—that part of the data-processing department devoted to end-user computing—cause much discussion about what such centers should be and who should pay for them. Partly because end-user computing has become more common, and also because the explosion of user-friendly software and personal computers has created new demands on dp resources and support services, how a corporation views the relationship between its information center and users will define who foots the bill—the corporation, the users, or both.

According to a recent Crwth Computer Coursewares survey, corporations have no set approach to charging for information-center services. Some corporations, because they are still acquainting users with information-center services, don't charge costs to departmental budgets. Instead, they count information-center services as overhead, as they would accounting or photocopying. Other organizations take the opposite position: They have elaborate chargeback systems based on complex formulas designed to allocate all information-center costs to users' budgets.

A chargeback system is most difficult to design for in-house timesharing systems used by many employees with varying levels of programming expertise. If, for example, an executive with little computer experience uses a rela-





CHARGING BACK

tional database and a fourth-generation language, he or she can query the database directly to generate reports without having to approach the dp department. The structure of a relational database—like a series of cross-referenced tables—and the English-like syntax of fourth-generation languages make it easier for nontechnical users to understand and to manipulate. However, relational databases and fourth-generation languages are notoriously resource hungry. First, much processing power is required to transform an English-like sentence into a database query. Second, relational databases don't use memory and central-processing unit (cpu) time as efficiently as conventional hierarchical and network databases. A corporation that uses such a combination trades processing power and memory for faster response time and ease of use. Who should assume the high cost?

Although easy-to-use technology helps make users more productive at

computing, it does not help them understand the concept of paying for dp services. Because many nontechnical users don't fully understand the ramifications of various systems, they don't see the hidden costs that the information center must absorb. At the beginning, anyway, most corporations either don't charge for information-center services or charge only nominally. According to Steve Hopper, information-center manager at Liberty Life Insurance Co. of Greenville, SC, this strategy encourages use of the information center. "We may institute a chargeback system sometime in the future," says Hopper, "but now we don't charge users directly. We view information-center costs as overhead."

Floyd Johnson, market-support manager for the Solution Center, a line of information-center products from Honeywell Inc., Minneapolis, notes, "When a corporation is starting an information center, it shouldn't charge back dp costs because users have to be

encouraged to use equipment they fear. It usually takes users two or three years to become comfortable with the idea of doing their own computing." In studying cost-allocation practices at various information centers, Johnson has found that some corporations, rather than charging users each time they use information-center services, impose fixed-percentage charges. "I think we can expect information centers to be treated like photocopying centers," Johnson says, "particularly in large corporations where information-center use is proportionate to the size of each department."

Johnson cautions that fixed-charge schemes only work in organizations that have a large number of computer-literate managers and executives in all departments. When technical expertise is concentrated in a few departments, this kind of chargeback system is less likely to be successful. As disparities between departments' information-center use and charges arise, departments

CHARGEBACK SOFTWARE

Vendor	Package	Equipment	Price	Circle
Boeing Computer Svcs. (703) 821-6200	Facts	IBM mainframes under VS1 or MVS	\$9,000 per license; lease at 10 percent of license fee per month for 15 months	439
Computer Assoc. Int'l. (516) 333-6700	CA/JARS/CICS	IBM 370, 30XX, 43XX under DOS/VSE, MVS, SVS, or OS CICS/VS	\$4,000 (DOS) \$6,000 (OS)	440
	CA/JARS/VM		\$4,500 or lease for 10 percent of purchase price	
Duquense Syst. (412) 323-2600	QCM/JAB	IBM mainframes under MVS, SVS, VS1, or OS	\$6,000	441
Morino Assoc. (703) 734-9494	MICS/Installation	IBM 370, 30XX, 43XX under MVS or MVS/XA	\$7,900	442
Pace Applied Tech. (703) 369-3200	Komand/DP	IBM 370, 30XX, 43XX, and PCMs under VS1 or MVS	\$2,500 or \$275 per month for charging module alone	443
Signal Tech. (805) 683-3771	Pacs	DEC VAX	\$2,500 to \$4,900	444
Strictly Business (215) 357-4396	Terms	IBM mainframes under OS, DOS/VS, or MVS	\$50,000	445
Systems Mktg. Consultants (617) 682-2380	Dapac	Honeywell series 6000	\$14,500	446
Value Software (609) 482-2500	Comput-a-charge	IBM 370, 30XX, 43XX under DOS/VS, VSE, VS1, or MVS; Honeywell systems under GCOS	\$14,000 and up	447
VM Software (703) 821-6886	VMaccount	IBM 370 under VM	\$8,500	448
VanArsdale Assoc. (919) 851-6917	Sys/34 Version	IBM S/34	\$1,000	449
	Sys/38 RAA Version 2.0	IBM S/38	\$2,000	

charged for services they make little or no use of will object to the imposition of a flat rate. So, some corporations opt for "pay as you go" chargeback. "If a corporation cross-allocates other costs to each department, dp services shouldn't be excepted," says Jim Smith, vice president of interactive computing of Security Automation Co., a division of Security Pacific National Bank, Los Angeles. "At Security Automation, each department pays for anything that can be quantified, including information-center services."

Corporations that charge users directly must make sure the charges are fair. Because no cash changes hands between users and the information center and because the "goods" users receive are not tangible, a set of abstract computational rules—algorithms—must be used to determine who pays how much. In creating an algorithm, developers factor in cpu time, storage, and other elements that represent the true costs of computing. Ideally, the formula should be easy for users to understand and fair to everyone. In practice, deriving an algorithm that meets these criteria is extremely difficult.

One of the problems facing algorithm designers is how to reconcile variations in intensity of cpu use and data storage for equivalent amounts of time on the system. The simplest chargeback systems for timesharing mainframes allocate costs on the basis of time logged on the system. For example, a user who performs sophisticated financial analyses probably uses a lot of cpu time; another user who extracts information from a database may use a lot of memory; and a third user who queries a database probably uses less of these critical resources. Unless these three users do the same kind of work, their demands on the system will vary widely even though they may spend the same amount of time on the system. As a result, their costs should reflect the strain each imposes on the sys-

tem. A chargeback system based solely on time will seldom reflect the true costs incurred by each user.

Recovering dp costs is not the only reason corporations establish chargeback systems. They also use such measures to control and monitor demand on their systems. A corporation reaching the limits of its cpu capacity may want to impose a cpu charge higher than the actual cost to discourage use and extend the utility of equipment. Security Pacific imposes time-of-day charges, encouraging the use of equipment at off-peak hours.

Many information managers design their own chargeback systems even though several chargeback-software packages are available. These managers want to tailor their algorithms to their organizations' special circumstances. They may also have difficulty finding suitable packaged solutions. According to Jim Smith of Security Pacific, "There aren't a lot of packages designed for IBM's VM mainframe operating system."

The biggest problem facing algorithm designers is reconciling the requirements for full-cost allocation with user comprehensibility. Many managers find that extremely elaborate chargeback algorithms are self-defeating: A system that is too sophisticated for its users may accurately track the cost of computer use, but if users don't understand how the system works, they won't efficiently use the resources the system monitors. As a result, information-center chargeback systems are usually simpler than the internal-accounting systems used by dp departments, and they often don't attempt to recover the full cost of service.

Another factor determines whether an information center will opt for direct chargeback: cost-effectiveness. Even organizations that have aggressive chargeback policies, such as Security Pacific, can't spend a dollar to track a dime. Referring to the telephone

"Corporations have no set approach to charging for information-center services."

hotline the bank offers its personal-computer users, Smith says, "It's almost impossible to charge users for hotline services. With 1,200 to 1,500 microcomputer users, there is no way we can economically account for each call, charge each department, and keep the volume up. We have to consider hotline costs as overhead."

According to Smith, certain prototyping costs also fall into the overhead category. Many of the systems his group puts together—like hooking an IBM Displaywriter II to a Hewlett-Packard printer—are expensive to implement the first time around. How many future users will benefit from those systems is difficult to predict, Smith says, and this complicates the issue of charging current users for development costs.

Most information managers accept nonchargeable costs as facts of life. They charge for the costs they feel are reasonable and appropriate. Which ones are directly charged vary from company to company.

At the Travellers Insurance Co., Hartford, CT, users of the company's timesharing IBM 3084 QX are charged for the time logged onto the system and cpu usage. According to Judy O'Connor, the information-center manager, data-storage costs will be broken out and charged separately starting next year. In addition, the users pay for equipment such as terminals and personal computers. "The only alternative would be to charge for the services in the information center, and I really don't see that happening," she says. The cost of the information-center staff is allocated to the departments.

O'Connor adds that because the information center's rate structure is very similar to the one used for other data-processing functions, the user departments are already familiar with it. (Cont)

"How corporations see the relationship between users and info centers defines their chargeback policies."

(Continued from page 97)

At Security Pacific, on the other hand, the goal is to have as much as possible of the cost of the information center allocated to users. Even costs that most other centers write off as overhead are charged to the users whenever possible, says Smith. "We are totally funded by the users through their use of the system," Smith says. "It hits the same account code on the general ledger as if the money were spent with Boeing Computer, Compuserve, or other computer-service firm."

Starting in fiscal 1984, managers at the bank had to budget their time-sharing expenses in the same way they budget outside expenditures. "They can't go over budget and say 'Don't worry about it, it's only funny money,'" says Smith. "It's not funny money. There is no forgiveness from upper management if you go over budget."

Last year Security Pacific users began paying the full price. This year, a 5 percent growth ceiling was imposed on user departments. What was the result? Managers started looking for ways to cut cost, even to the extent of having professionals work off shift.

Although how far a corporation will go in allocating all dp costs depends on the degree to which it quantifies its expenses, for many information managers, how to account for costs incurred by personal-computer users complicates the chargeback issue. In most corporations that use microcomputers, services ranging from acquisitions and training to the allotment of memory and actual usage are handled by the information center. In some corporations, the information center deals exclusively with personal computers. Although the introduction of microcomputers made many traditional data-processing functions more accessible to users, it also presented managers with a new set of cost-allocation considerations.

The actual costs of microcomputers and software are easy to allocate. They

"If a chargeback system is too sophisticated for users, they won't efficiently use the resources the system monitors."

represent tangible costs that can be billed to each user department. What is less easy to allocate are the other costs associated with these systems: training, support, and custom-programming costs. The most straightforward allocation method is to charge for these services on an hourly basis. Some corporations with their own computer stores include the cost of a few hours of training and support in the price they charge "customers" for equipment.

However, the costs of training and support do not remain constant over the life of the machine. Users tend to need a lot of training and support in the beginning. The need tapers off as they become accustomed to the equipment. Unless the organization is constantly adding new personal computers and software, this pattern makes it hard to spread out training, support, and consulting costs over the long run. At the same time, if the training and support staffs are allowed to run down in response to diminishing user demand, the organization will be hard-pressed to handle the next wave of hardware or software changes.

Charging at least part of the cost to users keeps user support from being a money-losing proposition in slack times, although the information-center manager still has to make effective use of the people. Right now, this concern is more theoretical than practical at many information centers. Most centers are still in-

stalling the first wave of personal computers, and their biggest worry is meeting user demands for support and training, not how to keep busy.

Custom-programming services suffer from the same pattern of uneven demand. Given the tens of thousands of software packages available for personal computers, it is rare for a user to want an application developed from scratch. However, an increasing number of users need "templates" for spreadsheets and database-management programs. A template is a pre-stored series of commands that adapts a general-purpose tool like a spreadsheet to a particular application. Templates aren't as hard to write as application programs, but they are often beyond the skill of the typical user.

One way to even out the flow of work for training personnel is to offer personal-computer classes on advanced topics—such as how to design and build templates on the applications programs the company uses.

Security Pacific offers a regular schedule of classes that have been very well received by its employees. "We announced our fourth-quarter schedule on a Monday morning and every one of those classes was booked by the end of that business day," says Smith. The students pay a fee for each class.

"Our goal is to deliver this technology in a functional way to the user," Smith says. "Education is not design and implementation. We hold to that so firmly that if a consultant is needed for a project, we will recommend the consultant and then insist that the consultant work with the user. There is no need for data processing to be in the middle of things." The result, Smith says, is that users don't rely on the information center.

As Smith suggests, providing users with a working knowledge is the way to go if a chargeback system is to be successful. Rather than an accumulation of inert facts, users need to have a meaningful understanding of chargeback informed by the financial realities peculiar to technology. □

Rick Cook is a free-lance writer based in Phoenix, AZ. He frequently writes about personal computers.

"At first, most corporations don't charge for information-center services or charge only nominally."

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HOW TO UNMASK BOGUS JOB SEEKERS

By many indications, phony job applicants are running wild in MIS/dp. How can you root them out?

by E.S. Ely

Executive recruiters call them ringers—job applicants who change their resumes, the cut of their clothes, and their manners to fit jobs. Statistics indicate the number of ringers is dramatically rising. Out of every 100 applications investigated by the National Credit Verification Service, for example, 30 contain “a significant misstatement of fact”—from a phony degree to a puffed up job title or an inflated salary, according to Kay Henry, marketing vice president of the Minneapolis firm. Henry says up to 25 out of every 100 MBAs the firm checks are fraudulent.

“In some cases, applicants claim to have three degrees but we find they don’t have any,” says Henry. “We’ve

verified information on people who are supposed to be medical doctors and aren’t. That’s scary.”

The incidence of ringers is high in technical fields at levels where advanced degrees and specialized knowledge is required. MIS/dp, because it demands professionals who can work with rapidly changing systems and software, is particularly vulnerable to ringers. “There’s so much pressure in technical careers,” comments David Arnold, an executive recruiter with Christian & Timbers in Cleveland.

Thus, MIS/dp managers often see applicants who puff up their work experience. “We see a lot of applicants who lay claim to singlehandedly changing information systems for the whole

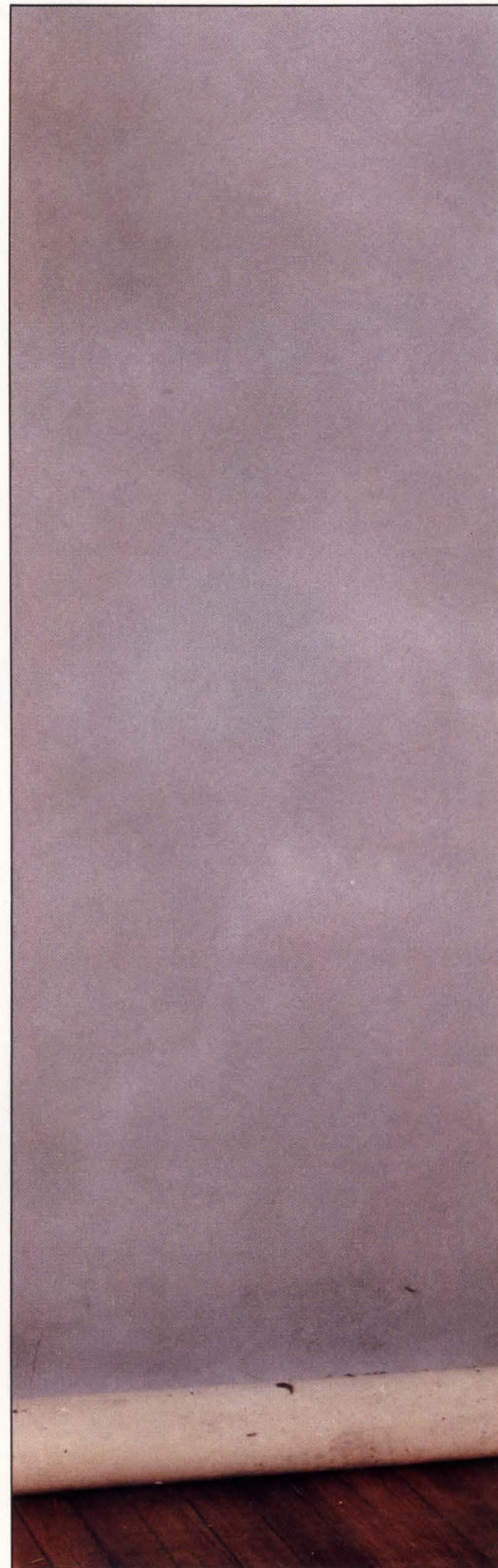


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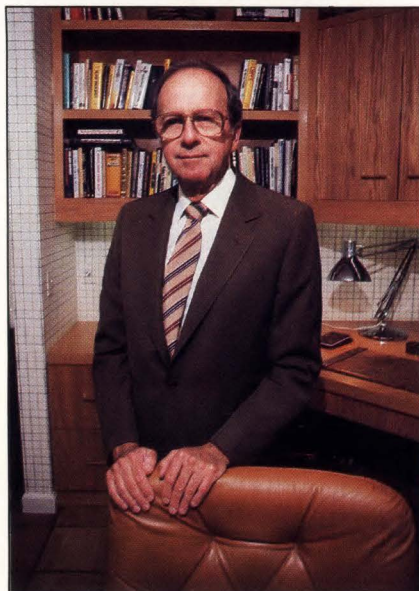
western hemisphere," quips Joseph N. Carroll, vice president for information systems at Prudential Insurance Co., Newark, NJ. "The typical inflated resume will carry a litany of acronyms for software and software-support systems currently in demand, as well as the model numbers of computers the applicant lays claim to having familiarity with."

Carroll estimates that half the resumes he sees are accurate, containing clear, precise descriptions of work experience. The remainder contain some fogger, and at least 20 percent contain what Carroll calls "flagrant misrepresentations."

For all their audacity, says Kay Henry, ringers have little reason to fear being exposed. Few employers check applicants' backgrounds. "Ten percent of the nation's corporations check credentials," she says. "It's positively amazing."

Two forces are behind this rise in phony resumes. The first is the growth of professional resume-writing services, says Gail Kennedy, a researcher with the Executive Recruiter Newsletter, which regularly exposes fraudulent recruiters. "Resume services teach applicants how to distort and misrepresent their credentials," she says. "They also assure applicants that to do this is all part of the game."

Resume writing is a fine craft indeed.



"A resume is nothing more than an ad," says recruiter Robert Half.

"Ten percent of the nation's corporations check credentials."

Henry, National Credit Verification

"I have seen the resumes of former employees who were fired for incompetence, and when you read these resumes you begin to wonder how we could have survived without them," says Robert Half, head of Robert Half Associates, a New York-based executive-recruitment firm that specializes in data processing.

The second—and far more troublesome—force is the increasing difficulty managers have checking references. "Corporations are afraid to say anything bad about former employees. If an employee is fired, they won't tell you," says Herbert Halbrecht of Halbrecht Associates, a Stamford, CT-based executive-search firm specializing in data processing.

Managers are reluctant to level with their peers in other corporations about former employees for a good reason, says Barnaby Smith, manager of recruiting and placement at North American Philips Corp., New York. "Managers are panic stricken about the number of suits filed over firings," he says. "Attorneys have been advising personnel directors and department heads not to give references. Everyone is afraid that anything they say will be used in court against them—and I mean anything."

Nonetheless, some corporations do surprisingly well at rooting out ringers before they get on the payroll. Observers say that the most successful are the large banks and insurance carriers. These corporations tend to have the longest experience in data processing, and the nature of their work generally requires a higher level of integrity. Corporations without this experience can get help from a variety of sources.

Credential services are both fast and inexpensive. For example, National Credit Verification Service offers a verbal report within 24 hours, with written

documentation within seven to 14 days. For around \$60, the service will verify a degree and two past positions, which is usually enough to expose an imposter. The drawback of such services is that they're no more likely to crack a tight-lipped former employer than your own personnel department. And if they do find dirt on a former employee, they won't report it—for their legal protection and yours—unless the employer will confirm in writing.

Robert Half recalls how a credential service saved him from a hiring disaster many years ago. Half had narrowed his search for an accountant to one candidate. He personally checked the applicant's references by calling the personnel director of a large department store for which the accountant had worked. "I should have known better," he recalls. "The applicant looked good, he spoke well, and his record appeared to be fine. The thing that bothered me was that he was willing to work for a small salary."

Fortunately, Half's company contracted an outside service for a backup check of the candidate's background. "I got a telephone call and a voice said, 'This fellow you've hired served five years for armed robbery,'" Half recalls. "I didn't believe it, but the service provided a photograph with the numbers across the bottom. It was the same guy." Half let the accountant go.

Tests of applicants' computer skills—especially programmers—have been around for a long time. Now there's a sharply rising demand for tests of more advanced skills—for systems and operations managers, for example. "As you get higher in the data-processing organization, the testing is being extended rather considerably," observes Charles Roan, a consultant based in Atlanta. Tests are also becoming more numerous. Wolfe Personnel Testing Systems of Oradell, NJ, for example, offers 29 tests ranging in cost from \$25 to \$300 each. Most tests, including those offered by IBM, the largest computer-test supplier, are short answer and multiple choice and can be graded by the tester.

For high-level jobs, such as operations manager, an employer can put an applicant through an assessment cen-

Photo by Patrick Partington

"MIS/dp, with its demand for professionals who can work with rapidly changing systems and software, is vulnerable to ringers."

ter, a simulated operations unit in which the candidate is put through an actual workday loaded with problems. A run through an assessment center costs about \$10,000 to \$15,000.

But testing has its drawbacks. As Charles Roan observes, the skills sought in top analytical and managerial jobs, as opposed to programming assignments, are very hard to quantify. Wolfe's Steven Berke agrees. Care must be taken to select the right test, one not beneath the applicant's experience, and even then, Berke says, "Testing should not be the whole answer. It should be part of a complete program, the red flag when all other signs are favorable."

Another major drawback is alienation of the job applicant. "There's that fine line in interviewing," says Bill Sebrell, director of dp education at The Hartford (CT) Group, the major insurance carrier. "You're selling the applicant on the corporation, particularly the experienced professional. You're really hustling. That's one reason we don't use tests. They can offend an applicant, who will walk out and say, 'You're not testing me. I'll go to ABC company.' You'll knock out the ringers, but you'll knock out good applicants, too."

If tests alienate applicants, polygraph tests seem draconian. Polygraphs seem to pass in and out of vogue and legality as a method for rooting out ringers. Ironically, despite the popular lore about "lie detectors," these tests are not particularly effective on ringers. "Polygraphs are really stress detectors. They can tell if someone is experiencing stress; they cannot tell you why," says Professor Robert P. Vecchio, chairman of the Management Department at the University of Notre Dame in South Bend, IN. Lie detectors are used much more successfully in employee theft cases. Says Vecchio:

"Polygraphs don't do well in detecting lies per se, but they can detect 'guilty knowledge.'"

The first line of defense against ringers, many managers believe, is to use executive-search agencies. Headhunters don't come cheap, charging up to 25 percent of a hiree's first-year salary, but they can save hours of wading through resumes and interviewing candidates. Many corporations rely on two or three recruiting firms to weed out ringers, oddballs, and also-rans. Some corporations keep executive-search firms on retainer. Applicants sometimes "retain" headhunters, but as a practical matter, a headhunter's loyalty is to the employer. After all, the employer has the leverage: Satisfaction or no fee. "If we have an agency that's feeding us turkeys, or people who are only around a year, we drop that agency," says Bill Sebrell.

The top agencies with long experience in a single discipline are especially effective in locating specialists. Headhunters can also be expected to pull information out of the candidate

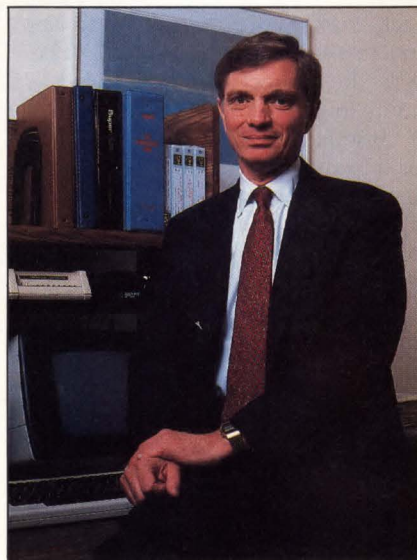
that he or she might not be as willing to reveal to a personnel interviewer. Why? Many job applicants view the recruiting firm as being on their side, as an agent is, regardless of who approached whom. The recruiter can delve into the applicant's personal life, asking questions about details, such as marital status, that potential employers are forbidden by law to ask. What results is a more complete profile of the candidate. "Agencies can ask the questions you cannot," says one executive.

A recruiter also has a better ability to run down references. Most headhunters have contacts in the previous employer's data-processing operation or know someone who does. Indeed, the former dp manager may be a present or former client, so he or she may be less inclined to lie about or cover up a former employee's past.

In fact, says Herbert Halbrecht, a former client would be a fool to lie. "We are part of a network of senior pros," he says. "As part of the network, contacts won't lie to me. You've got to be stupid to lie to a search firm about references you know are not accurate. If you know that the information I'm checking on is inaccurate, and you say it's correct, I will crucify you the first chance I get."

The most effective defense against ringers, however, is the employer's own screening process. The employer should have three goals in mind: first, to sell the company to the candidate; second, to determine whether the applicant will make a good employee; and third, to learn whether that person knows his or her stuff. To accomplish this, successful employers use a two-step hiring procedure. In the first step, a personnel expert interviews the candidate. The interviewer is selling, but he or she is also subtly digging out details about the applicant's work history to determine whether the candidate will make a good employee. The interviewer quietly matches dates, elicits names of bosses with whom to check, and watches for telltale reactions.

"A lot of it is intuitive," says Bill Sebrell of The Hartford. "That's why a skilled interviewer is so valuable. They're not looking at technical qualifications at all; they're just looking at the



Recruiter David Arnold uses interviews to test the applicants' openness.

Photo by Jake Ragan/R Studio

individual for his or her employability."

Some large employers, such as Merrill Lynch, the big New York-based securities brokerage, even place technically adept interviewers in their personnel departments. "They're familiar with all the buzzwords and pretty hep to the kinds of systems we use, so they're able to do a preliminary screen," says Frank Paparella, vice president for human resources. However, what these interviewers are really concerned about, says Paparella, "is stability of work record and getting a feel for motivation. Can the applicant do the job and does he or she want to do it?"

An interviewer in the personnel department, technically aware or not, has the advantage of being dispassionate. His or her first loyalty is to the corporation, not the needs of the MIS/dp department. He or she will not be impressed just because the candidate is the only person in eight states who knows XYZ language.

The second round of interviews at Merrill Lynch is with the dp manager or someone in the department to which the applicant will be assigned. "That person does a very technical inter-

view," says Paparella. "That's where we screen out most of the ringers, unless they're great imposters in the Tony Curtis mold."

If the person is hired, Merrill Lynch then has an outside service do a second credentials check, backing up the one done by the search firm. If something questionable turns up, Merrill Lynch reserves the option to cancel the job offer. That doesn't happen often, though. "It's easier to expose ringers on the technical side than on the nontechnical side," says Paparella. "They either have it or they don't."

In addition to using agencies, Merrill Lynch recruits through an internal employee-referral program. The employee who refers the successful applicant is paid \$1,500. Though the process is not speedy, it's considerably less costly than using an agency, and the quality of the hires is just as strong, says Paparella. "The employee making the referral is working here, and you know that by putting his or her name on an application he or she has got to be pretty sure that the person has what it takes."

At The Hartford Group, which hires

some 200 dp pros a year, candidates go through three interviews. "The first is with a personnel specialist. They seem to be pretty good at weeding out candidates who are lying or have something fishy about them," says Sebrell. "That's the initial screen. Then they go to the division that's going to hire them—for two interviews. One is a more general interview, and the other is with a technical interviewer."

Management's involvement in the interviewing process is vital. It's in your interest to help any way you can because ringers have a detrimental effect on your staff. Part of your contribution will be intuition, as Sebrell suggests, but there are certain giveaway clues that an observant manager can look for.

Before going into the interview, mark up a copy of the applicant's resume. Look for red flags and unclear points. During the interview, confirm the applicant's work history. Get the answer to one basic question: Can the applicant do the job? Proceed on the assumption that most of what you will eventually learn will be gathered here. You may get lucky and find a chatty former boss, but you can't depend on

RESUME WARNING SIGNS

A resume is nothing more than an ad, a balance sheet without liabilities, says Robert Half, head of the New York-based recruiting agency that bears his name. "An applicant will always slant his or her resume," says Half. "Your challenge is to determine how slanted the document is."

You'll gain insight into what an applicant's work experience has really meant by carefully picking through his or her resume, say Half and other experts. For example, look for inconsistencies. Resume puffers invariably claim too much expertise for their age.

Rely on your instincts about what's a realistic achievement. "You know it's often not realistic for a person to achieve high-level responsibilities at a young age," he says. Puffers often claim project-leadership roles, when in fact they

may have only been members of a team. True project leaders spend three to four years on a task; if the resume lists a year or two on a project, chances are the candidate was in a lesser position and either left before the project was completed or came in late.

Joseph N. Carroll, vice president of information systems for Prudential Insurance Co., Newark, NJ, advises managers to look for a pattern of progression to claimed skills and job titles. If no pattern is evident, the applicant should be asked to explain. "When you see responsibilities that don't add up, you should be suspicious," he says.

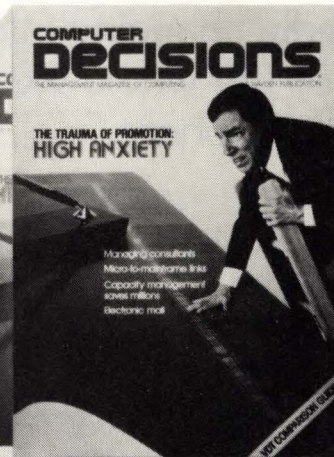
Be on the watch for unfamiliar, though impressive, titles. One puffer tried to impress Carroll with a fancy title containing the name of a job-control language. "The language that applicant used would lead you

to believe he had an operational-firefighting, troubleshooting kind of responsibility on a three-shift operation for a major data-processing job," says Carroll. That wasn't the case.

Similarly, look for open-ended phrases, which are often intended to deceive. One favorite is "knowledge of," as in "knowledge of APL." That could mean simply that the applicant worked for a corporation that used APL. Another open-ended word is "assisted." That could mean the applicant handled Xeroxing.

By contrast, the phrase "heavy knowledge of Cobol" means the applicant has genuine experience with Cobol and is prepared to be queried in depth. "Now you've got a base to ask questions," says Half. Of course, the next question is whether the applicant's characterization of his or her experience is inflated.

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"We see a lot of applicants who lay claim to singlehandedly changing information systems for the whole western hemisphere."

Carroll, Prudential

it. Also, don't expect to learn much from that former boss without having specific questions lined up.

One caution: Interviews are not interrogation sessions. You are attempting to gather information while selling the company. "You have to be very subtle," says Sebrell. "You have to be very careful how you grill applicants." The trick is to get the candidate to open up. Sidney Janus, an industrial psychologist in Atlanta, believes the purpose of an interview is "to enhance the applicant's candidacy by giving him or her enough leeway to adequately express his or her experiences—to cut the generalizations and get down to specifics. If an applicant is going to hang, let it be self-inflicted," Janus says.

Prudential, for one, "double teams" applicants. One manager asks questions while the other pitches the corporation. "Part of the interviewing process is a salesman's job," says Carroll. "We don't want to lose the good prospects. We make it as positive an experience as we can, while at the same time carefully checking the facts."

An interviewer can intuitively learn much from an applicant's responses to questions. "I ask a lot of questions," says recruiter Arnold. "I listen to an applicant and I think. If you ask a lot of questions in a lot of areas, if you talk about work and after-hours interests, you tell an applicant a little bit about yourself. You begin to find out if an applicant is open and honest or if he or she is pretty damn careful about opening up."

As Janus observes, "Most applicants are not good liars. If they're lying they'll be fidgety and a little hesitant; they'll go back on some of their answers to try to rationalize what they've told you."

The interview serves another function as well: getting references. "Ask

who an applicant reported to, get a name and title, and ask what that person is doing now," advises Arnold. Then ask if you can contact the former boss. "Make it clear that you intend to check. If that applicant is a fraud, he or she will begin to sweat," Arnold says.

Arnold smokes out phony degrees in a similar manner. "I ask applicants to sign a confirmation letter that I send to the learning institution involved requesting confirmation. The applicant who's lying usually won't sign the letter, offering the excuse that it's not important or trying to avoid the issue," says Arnold. Ironically, university registrars will provide this information over the phone, he notes, and letters aren't necessary. You may also ask the applicant who prepared his or her resume, and you may, as Notre Dame's Vecchio suggests, ask him to transfer the information to an application form and then sign it.

Another matter that deserves close scrutiny is salary, which is often inflated. Find out what the applicant's base pay is by breaking down his or her salary during the interview. As Robert Half explains: "If a candidate says he is earning \$30,000, does that number include a bonus? Does that include overtime? The base salary may be as low as \$22,000." Some candidates go so far as to project their year-end earnings on job applications.

Just as a close read of the resume prepared you for the interview, a well-run interview prepares you to check references. Despite all the fears over lawsuits, this process can prove highly productive if you remember some key points. First, you're really on two separate missions: One is to establish the dates, titles, and other facts about the applicant's previous employment, and the other is to assess the quality of the

applicant's experience. If you can't get a reading on the quality of experience, at least insist on establishing the bare facts. If your candidate is a fake, he or she will be exposed by inaccurate facts, such as a phony title or dates that are awry.

After the interview, you should have a list of references to contact. These names, in effect, take control away from both the applicant and the personnel department. Often, in making your initial reference calls, you'll get lukewarm, noncommittal responses, or, "Sorry, we aren't allowed to disclose that." Such replies should set off alarms. The chances of a reference's lying are greater when an employee has been fired, especially for serious cause, such as theft, say experts. "Many managers concoct a story about the employee in case someone calls," says David Arnold. Of course, the candidate may have been an excellent worker, making any vacillation totally unrelated to his or her performance.

When you begin calling, go easy on the former employer. Say you're calling only to verify employment, advises Half. "A source in another corporation can't get in trouble by verifying the truth," he notes. Also, you may be able to establish enough rapport to get the other manager to open up and provide you with revealing insights.

The next bit of wisdom is that the higher you go in the organization, the more truthful the answers will be. Try to talk to the highest-ranking manager who was familiar with the applicant's work. "Corporate presidents will give the most candid references," says Robert Half. "They fly by the seat of their pants. The personnel director, on the other hand, will be the least candid. He or she could lose their job over an indiscretion."

Another approach, recommended by Notre Dame's Vecchio, is to ask if the former employer would hire the applicant again. "That gets to the heart of it," he says. Answering the question negatively is telling the truth, so the former employer is relatively safe, says Vecchio. Thus, even if the former employer doesn't elaborate on the employee's performance, you come away with a bottom-line evaluation.

RAMPANT RINGERS



When checking references for very sensitive positions, Half recommends a personal visit to the past employer. "It's harder for people to misrepresent facts in a face-to-face encounter," he says. "You can detect enthusiasm or lack of enthusiasm. You can tell a lot by the former employer's expression. You get a better feeling."

Don't put much stock in a letter from a former employer, Half warns. "Be polite, look at it, but ignore it," he advises. "That letter may have been written under duress. I call such letters the fired employee's last fringe benefit."

In all this checking and digging for details, you're bound to come across a bogus fact or two. In theory, that's grounds for not hiring or, if the applicant is already on board, for a summary firing. The reasoning goes: If an employee lied on his or her application, he or she is just as likely to steal. In reality, however, many employers are willing to excuse some misrepresentations. The test invariably is whether the applicant can do the job. If the candidate is qualified, managers should look at what the employee lied about and why, says Herbert Halbrecht.

Corporations write off some common misrepresentations, say experts. For example, most employers are quick to forgive an applicant who stitched together two jobs to cover a month or two when he or she was actually out of work. Others concede that some jobs go sour. Even phony degrees are forgiven by some employers if the employee is otherwise highly qualified. "That's the one area where I will give

an applicant the benefit of the doubt," says Halbrecht. "If 15 years ago the person fabricated a degree needed to get a job, I'm not going to put myself on a high holy level to brand him as a liar." Halbrecht insists, however, that the applicant's resume be amended before it's forwarded to an employer for consideration.

However, just how far should you let standards of integrity slip? Ultimately, you face the question of how a bogus representation reflects on an applicant's character. To make that determination, there's one sure test: the confrontation. "The key to the whole thing is how the applicant handles it," says Barnaby Smith of North American Philips. "If the applicant falls apart or gets arrogant or defensive, he or she is in trouble with me."

The specific fact that the candidate lied about or fudged is not important, says Smith. "If an applicant can do the job and never made it out of high school, we don't really care," he says. "I don't want a liar in the corporation. If an applicant confesses and handles it in a mature way, we're not going to throw him or her in jail. But if the candidate denies it, he or she will do the same thing when questions are raised about monthly reports. You just can't live with that."

That rule also seems to hold for firings. Don't expect to see it mentioned on the resume, but do expect the candidate to bring it up in the interview without much prodding. "I estimate that 90 percent of the workforce, maybe more, has at one time been fired," says Robert Half. "But what was the cause? That's what is important." If an applicant speaks openly about a firing, adds David Arnold, he or she is probably willing to tell the truth about other unpleasantnesses.

Even with the most careful screening, ringers occasionally slip through. The best giveaway, of course, is poor performance. Another is conflicts with staff. Underqualified employees have a way of creating personality conflicts to cover up for their inabilities. These signs should be heeded immediately, before loyalties build up. Too often, superiors will avoid recognizing the mistake they've made, out of pride or some other reason. Rather than rid the organization of the ringer, they seek to train the person. That course, however, just forces other employees to carry the ringer's load, worsening the disruption.

The ringer should be fired quickly and without recrimination, experts advise. Gather information to document your decision, and preserve it on paper. "There's no big legal risk at that point," observes Vecchio.

After the ringer leaves, take the opportunity to examine what went wrong. You may learn from the experience and make adjustments in your hiring practices to prevent other ringers from landing on your staff. Experts assert that if a corporation is not routinely checking credentials, it's probably ignoring other fundamentals of hiring—and the result is mediocre talent. By contrast, a hiring system that nets ringers is believed to bring in the best talent that's available. □

E.S. Ely is a free-lance writer based in Hackensack, NJ.

"Many managers believe executive-search agencies are the first line of defense against ringers."

SOFTWARE: SLOWING TIME'S MARCH

Applications software can grow old overnight, but you can prevent age from becoming obsolescence.

by Don Shafer

Time moves forward, and corporations grow. And to handle this growth, management turns to increasingly sophisticated technology. Networks are expanded, batch systems go online. Yet as the corporate engine is revved for the surge ahead, its power is restrained by application programs that are obsolete.

Obsolescence occurs when programs written for outmoded equipment or for old applications begin to drag on the organization, rather than pull it forward. According to Roger Martin, computer scientist at National Bureau of Standards (NBS), Washington, your systems could be losing punch if they're more than five years old, if their failure rate is growing, and if it takes longer

than ever to repair failures. Users will voice complaints more loudly, and the system will grow overly complex as patches are made to code. Also, programmers will have more and more trouble maintaining the system.

Software can grow old overnight, but it doesn't have to become obsolete. Planning for obsolescence—recognizing each application's limited life cycle and budgeting for its replacement, just as you do for office equipment—prevents aged systems from crippling operations.

A trained staff and state-of-the-art equipment help Pam French, development-center manager for the state of New Mexico, plan for software replacement. Using IBM 3081D and 3033



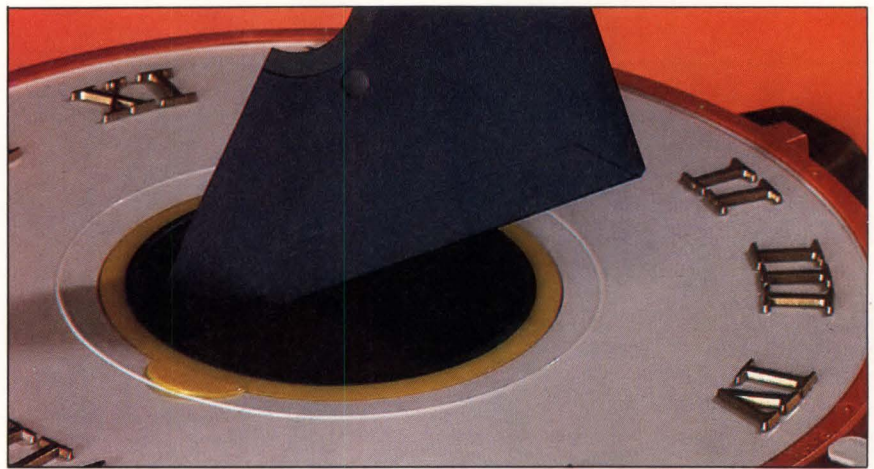
Photo by Bob Ward



mainframes running under the MVS/CICS online operating system for production and the VM operating system for development, French's programmers support a full set of in-house software and eight accounting packages from Management Science America, Atlanta. "The last system we replaced was a seven-year-old delinquent-property-tax application. Upgrading it from batch to online saved 25 percent of field investigators' time," she says.

Sid Diamond, director of information services at Bristol-Myers Corp., New York, avoids obsolescence by searching for "breakdowns in functionality" that raise dp costs. To measure functionality, Diamond compares the transaction costs of existing systems with those of state-of-the-art alternatives. He also takes surveys to determine user satisfaction. Finally, he compares in-house costs to bids from outside timesharing vendors to check the in-house systems' cost effectiveness. "Measurements on maintenance time and production time, combined with an understanding of cost trends, give me an accurate gauge of software obsolescence," he says.

Obsolescence need not come as a shock. It's part of an application's natural life cycle, and often can be diagnosed early by keeping close track of maintenance costs, user satisfaction,



and personnel turnover, and by weighing the cost of running a system against that of replacing it. Examples of investments that have gone down the drain because of failure to update systems that have become anachronisms are legion.

In "Penny-wise approach to data processing," *Harvard Business Review*, July-August 1981, Martin D.J. Buss predicted "nasty surprises down the road" for companies that do not plan for system replacement. Continual maintenance of old software, he says, will eventually lead to an irrevocable problem. Buss writes that without plans and budgets for system replacement, "the dp manager has little choice but to take measures that in the long term can

harm the competitive position of a corporation. Especially vulnerable are airlines, insurance carriers, and some banks."

Buss relates several horror stories about companies that failed to plan for system replacement. In one story, a mutual-fund-management firm modified an old, heavily patched program to send out premium-renewal notices for a group of clients. Inadvertently, it also generated 250,000 renewal letters for another group that wasn't involved in the premium-renewal program.

A manufacturer experienced a similar problem when its system suddenly produced shop orders for every item in stock because all stock quantities were set to zero by a modification in a relat-

IMPROVING OBSOLETE SOFTWARE

Carol Houtz, software branch chief of the General Services Administration's Software Management Center, is vitally interested in preventing application obsolescence. Her branch manages over \$100 million a year in contracts to modernize software paid for by tax dollars.

For example, the Social Security Administration is modernizing 4,000 to 6,000 programs totaling over 5 million lines of Cobol code, says Houtz. First, the code will be made uniform. Next it will be upgraded to Cobol 74 and restructured.

At first, Houtz says, users wanted to throw out the old code, which they said was confusing. But as soon

as it was realigned, "50 percent of the users understood it. Simple data standardizations and minimal improvements gain increasing user acceptance for the software, until finally the end user can make functional decisions for minor design modifications."

Houtz suggests these steps to deal with obsolete applications:

- Develop improvement recommendations.
- Take inventory of existing programs.
- Catalog user problems.
- Solicit recommended solutions.
- Match organization goals and objectives to application functionality.

Houtz also recommends a "soft-

ware improvement plan" that includes these major elements:

- Plan the evolution of your system to build on its investment.
- Provide planned, incremental enhancements to decrease risk and management exposure.
- Include the highest possible management levels in planning with progress feedback originating at the lowest levels of the user and programmer organizations.
- Develop a pilot project using the "software-improvement plan."
- Publish the specifications of the improvement.
- Incorporate a software-engineering methodology in your maintenance efforts.

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ed system for another purpose.

What causes old systems to wreak such havoc on operations? As software loses its edge, data-processing managers often tack on enhancements, turning the outdated system into a tangled web. Then, a final alteration to accommodate a change in corporate structure or in the marketplace—the proverbial last straw—sends the entire system toppling down.

Glen Mangurian, principal with Index Systems, a Cambridge, MA, systems developer and consultancy, explains how a system can be in sore need of replacement, yet still function adequately. "Applications have two potential kinds of obsolescence: functional and technical. A system can function fine but be a technical nightmare. In fact, most systems will first degrade technically because management prefers to add enhancements to maintain immediate usefulness at the expense of long-term fitness."

Mangurian believes this problem is a result of the chargeback systems used by most dp shops. Under these systems, users must pay the costs of the dp resources they use. Obsolescence-prevention planning has no obvious cost benefits to users. No attention is paid to prevention when business is disrupted. Thus, MIS/dp is forced to patch old systems. "We missed sending invoices for a week" or "We cannot implement that tactic because the system won't allow it" are phrases that MIS/dp managers can use to jar users back to reality in these situations.

There are ways to save your corporation from the ravages of obsolete software. Buss recommends starting by asking yourself five questions:

1. What trend have your data-processing costs followed for the last five years? If your dp budget has not kept pace with either inflation or the overall rate of your corporation's



Photo by Terry John

Noted consultant and author James Martin believes effective software maintenance will help organizations overcome software obsolescence.

growth, you're heading for obsolescence. You should be spending no less than 65 percent of the average in your industry for data-processing support.

If overall business revenues grow 150 percent faster than your data-processing budget, that number indicates inadequate replacement planning. Says Buss: "One large brokerage house that had underinvested faced an outlay of more than \$30 million in three years for new applications software. A life-insurance carrier found it would have to invest \$25 million in hardware and software in 30 months."

2. Is your technical staff spending more and more of its time maintaining software? It's important to make sure time is spent preventing obsolescence instead of simply patching up software to increase a system's short-term usefulness. Data-processing managers must provide an acceptable mix of enhancements and preventative maintenance.

3. What is your turnover among ana-

lysts and programmers? Buss says a turnover rate greater than 17 percent adjusted to account for job-market conditions for dp professionals in your region is a red flag for obsolescence. Programmers and analysts want to work on projects that are at least state-of-the-art, if not on leading edge. If maintenance work increases past a certain level, high turnover is usually the result.

4. Are you adding remote terminals fast enough? Expanding your systems' telecommunications base is a sure way to keep it up to date. Buss recommends a 25 percent growth rate in telecommunications.

5. When were your key programs designed? Programs used to keep your corporation's competitive edge should not be older than eight years, or you'll risk losing market share. Limping along with an old system is risky, as Hertz International Ltd., New York, learned when archival Avis Inc., New York, introduced its innovative "Wizard of Avis" automated car-rental system. Hertz had to rush into a major system redesign to keep up.

Buss' five questions parallel the key points in Bristol-Myers' long-range information-services plan. Diamond integrates the yearly business plan for each of Bristol-Myers' 30-plus business units into an "internally driven" dp

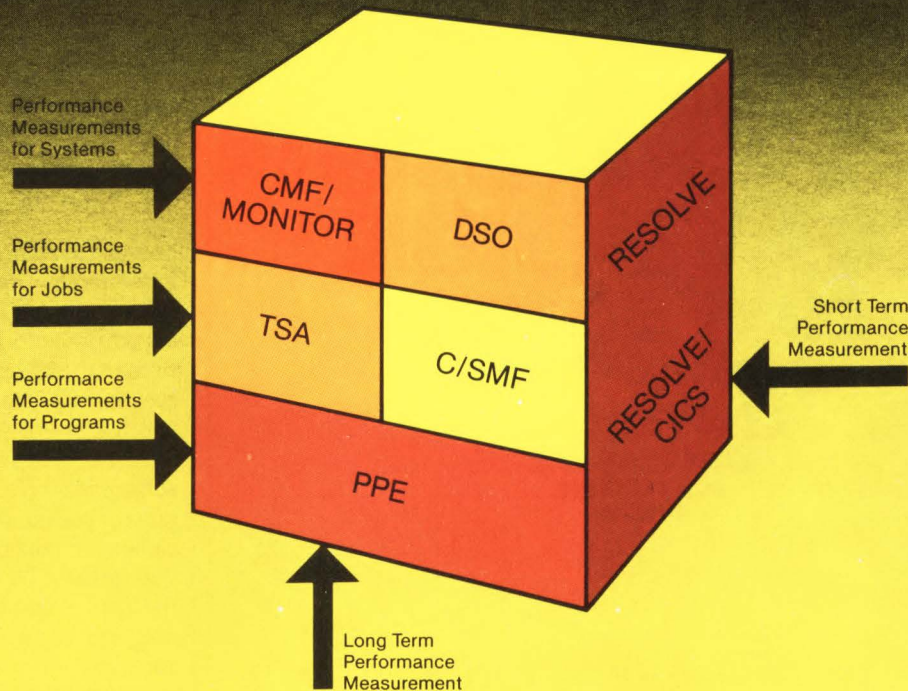
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plan. The combination of user requests, system age, personnel turnover, and maintenance costs determine planning for the next years' expenditures in application development, replacement, and preventative maintenance.

But asking those questions is not enough to combat obsolescence. Con-

sultants Linda Brice and John Connell, authors of a forthcoming book, *The Professional's Guide to Acquiring Software* (Van Nostrand Reinhold), recommend a structured plan to measure obsolescence. First, they say, look at the system's code to gauge the application's age. Then count the number of

service requests to determine its failure frequency. If your organization doesn't already have an audit mechanism for this purpose, set one up.

The third step is to measure mean time between failure and successful fixes. If the application is part of a production operation, you can use the control logs to determine this. Brice and Connell also recommend user surveys to gauge satisfaction. "Your organization should take a positive approach, and measure user satisfaction before there's a breakdown," they add.

Finally, they advise gauging the time spent by programmers on system maintenance. Says Brice: "In the organizations I've been associated with, we've developed a model to measure programmer and analyst time by development, enhancement, and perfective and adaptive maintenance. These are further divided by phases and tasks within projects. Resource tracking has to be a project-based effort-oriented system, tied to the applications for which a programmer is responsible."

Brice and Connell's solutions to obsolescence include updating documentation, testing system dynamics, and walking the maintenance team through the system. To avoid obsolescence in the first place, they recommend "formal and regular user surveys," measurement of maintenance costs and system reliability, and creation of organizational performance standards."

Roger Martin, who spent six years with the U.S. Navy Office of Management and Budget before moving on to the National Bureau of Standards, believes management is key to preventing obsolescence. The key to obsolescence prevention is effective management, he says. "You can have the right tools and the right methodology, but without disciplined management you'll continue to face problems with obsolescence."

Nicholas Zvegintzov, a consultant and editor of *Software Maintenance News*, New York, also stresses the importance of management in preventing software obsolescence. Says Zvegintzov: "Whether or not software is considered obsolete often depends on what a manager expects to gain. Clearly, a manager seeking authorization to replace a system will emphasize obso-

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lescence, and a manager who wants resources to upgrade and extend software will discuss longevity. Terminology and attitude have a lot to do with planning."

Zvegintzov supports the idea that "software only becomes obsolete when managers allow the external environment to get ahead of the software's capabilities." MIS/dp managers need to "inventory all their applications," he says.

James Martin and Carla McClure in their book *Software Maintenance: The Problem and Its Solution* (Prentice-Hall Inc., 1983), provide a general management approach to maintenance that is also applicable to overcoming software obsolescence. They list the following steps:

1. Conduct periodic quality audits of operational systems to ensure that quality remains at an acceptable level.
2. Make sure the data administrator reports to a high level and has enough clout to prevent deviation from approved data models.
3. Include experienced maintenance pros in the development process to ensure that software is developed with maintenance in mind.
4. Establish and enforce programming and documentation standards.
5. Identify old systems with expensive maintenance and redevelop them with more modern tools such as databases, fourth-generation languages, and better structuring.
6. Use an information center to maximize the use of user-developed and user-maintained systems that link into the data administrator's data models.
7. Motivate and educate all dp staff to undertake maintenance practices.

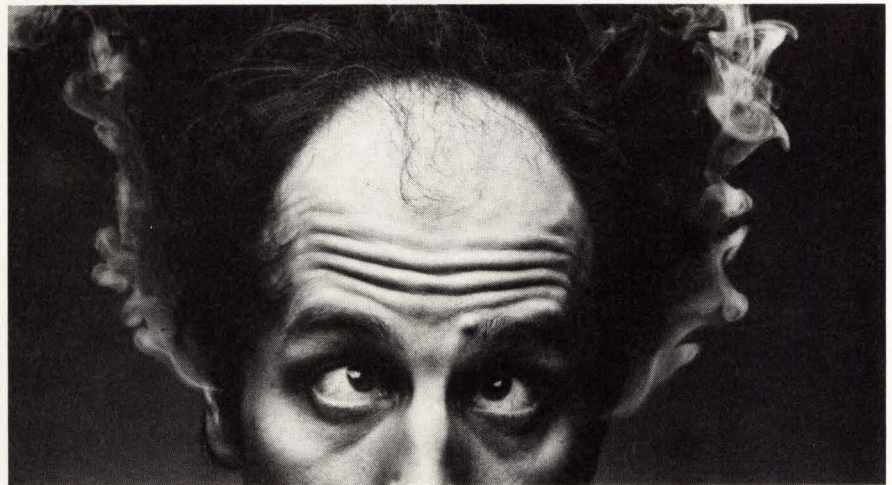
Some corporations successfully avoid system obsolescence through planning and constant attention. A.G. Edwards and Co., St. Louis, the nation's seventh largest brokerage house in terms of offices and the largest New York Stock Exchange member outside New York, has stayed competitive in part by avoiding software obsolescence. "With 4,000 online users, we have to keep our applications current," says Allen Kalb, systems director and a 17-year veteran with A.G. Edwards.

Kalb's boss, head of all operations

support, says company policy has been to provide its brokers with access to corporate databases for research. Staying ahead of the giant New York brokerage houses has required state-of-the-art systems. "Our software is a definite, hard asset that helps us stay ahead of the competition." That's why

it's important to prevent software obsolescence: to secure your organization's position at the leading edge. □

Don Shafer is deputy division leader of administrative data processing at Los Alamos National Laboratory, Los Alamos, NM.



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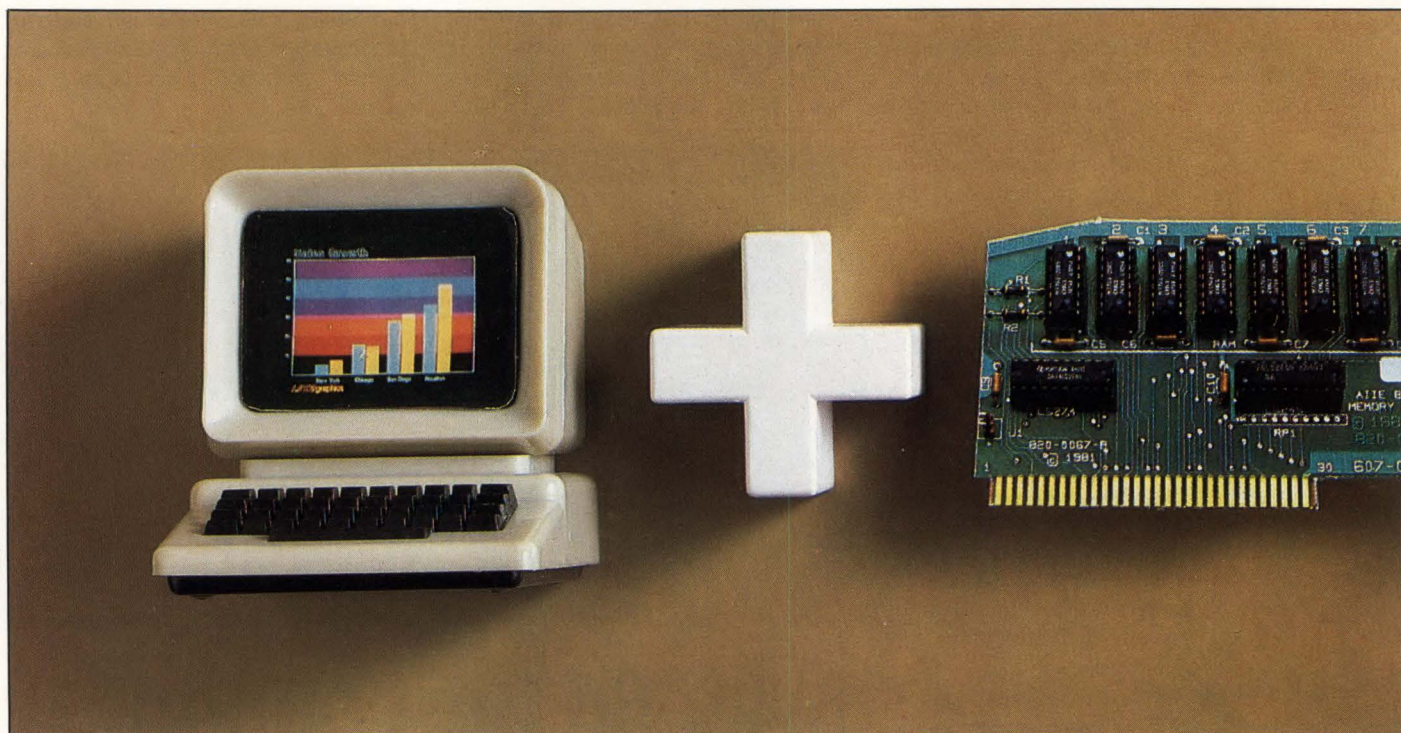
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ENHANCEMENTS FOR PRODUCTIVITY

First developed for limited tasks, enhancement boards now outshine the micros they support.

by Robert Moskowitz

Not long ago, upgrading a personal computer meant discarding the old system for a more powerful one. Hardware add-ons like enhancement boards were available for system expansion, but they did little more than increase memory by a small amount or control a peripheral.

Those days are over. More and more, a micro's power depends on the hardware enhancements added to it

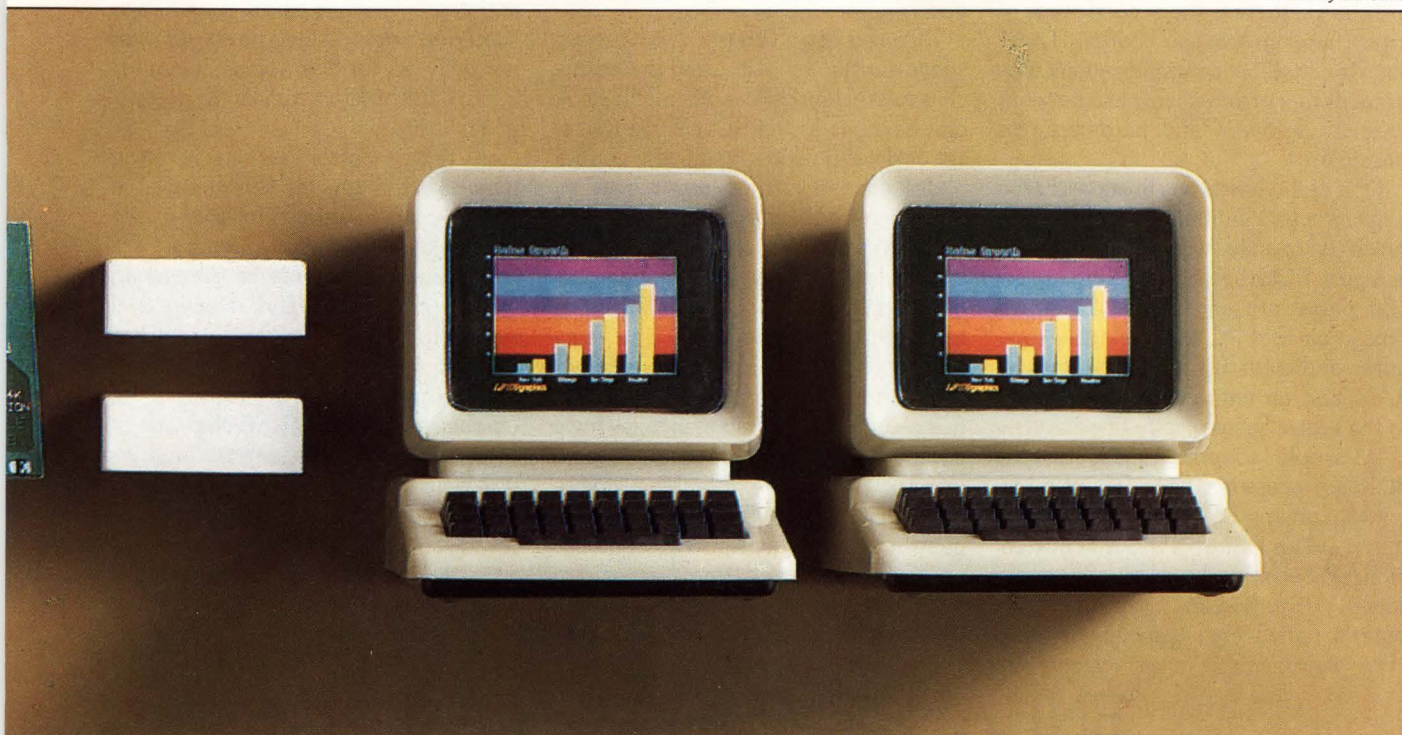
rather than on the computer's original processor and support chips. Now, peripherals can add millions of bytes of storage to a simple micro. Plug-in expansion boards not only can increase memory, but they can also increase processing speed, allow communications between a micro and a mainframe, and even turn a micro into a voice-recognition system.

A typical personal computer in-

cludes 256,000 bytes (256 Kbytes) or less of random-access memory (RAM), one or two floppy-disk drives for data storage, and a monochrome-display monitor. For most corporate users, that's just enough to get started. "I'll never forget my reaction when I first started using a computer," says Terrin Singer, an account manager with Deloitte Haskins & Sells, the Los Angeles Big Eight accounting firm. "Within a

BOOSTING MICROS

Photo by Bill Oliwa



week, I found I needed more memory. Within a month, I needed another disk drive. I was shocked to find it took so much to make the computer do what I wanted it to do."

For most users, the honeymoon with a new system ends quickly. A computer that at first glance seemed to process data at blinding speeds appears to move as slowly as rush-hour traffic when it is given a number of jobs to do. The 256 Kbytes of RAM that seemed inexhaustible can't accommodate the newest software packages. Processing capabilities that seemed limitless are diminished by the micro's inability to communicate with other micros or with a mainframe.

Even for users who are initially happy with their systems, infatuation often fades as the micro's limitations become more evident. "The longer you have a computer, the more you seem to yearn for vast amounts of RAM, multiple parallel and serial ports, hardware clocks, additional processors, and very sophisticated communications capabilities," says Rob Williamson, a Los

Angeles computer retailer.

Although the relationship between user and micro system may fall on hard times, it need not end in permanent separation. Enhancement boards can patch up the partnership by providing renewed speed, power, and versatility. A quick purchase, a fast insertion of new hardware into an expansion slot, and a dull system suddenly does sophisticated tricks its original designers never imagined.

Take the case of Howard Suber, professor of film and television at the University of California, Los Angeles. "I bought a stripped-down IBM Personal Computer and began to use it," he recalls. "But I wasn't satisfied until I plugged in a 33-Mbyte hard disk, a second color monitor, a clock, a modem, and 576 Kbytes of RAM. Now I've got a system that stores all my thoughts and papers and allows me to pull ideas from anywhere."

Enhancement boards have kept older systems like the Apple II from Apple Computer Inc., Cupertino, CA, alive. The Apple II is a simple system

that in many ways has been outdated by advances made since its release in 1977. But the Apple II has seven expansion slots, allowing the system to take advantage of the latest technology.

In general, bolstering a micro system's power is done in two stages.

First, users generally add enhancements from the following shopping list:

- RAM expansion of up to 640 Kbytes
- A hard-disk drive that stores from 5 Mbytes to 70 Mbytes of data
- A color display
- A printer
- A "spooling" feature that allows the system to do other work while it is printing
- A serial interface and/or a modem for communications
- A hand-held mouse to control programs without using the keyboard

With added features like these, the basic micro becomes a sophisticated, powerful business machine capable of doing a wide range of corporate tasks. For many users, adding some or all of

these first-stage enhancements gives them the system they need. But many corporate users need more than the first-stage enhancements offer. For such users, there is the second stage of supercharging: plug-in boards. These boards can allow communications with a mainframe or link micros in a network to share software and hardware, for example.

One of the best ways to supercharge a micro is to give it another processor, which is exactly what Orchid Technology's PCTurbo-186 does. PCTurbo-186 plugs into any of the expansion slots in an IBM PC or compatible computer and adds up to 640 Kbytes of RAM and an entire second processor to the native system.

A simple command activates the 80186 processor on the PCTurbo-186 board, creating a hybrid two-chip computer. When PCTurbo-186 is activated, its RAM becomes the primary memory space. PCTurbo-186 uses the computer's native chip (usually an 8088

processor) to store input/output routines, commands such as reading and writing information on disks, controlling a printer, monitoring the keyboard, or updating the display screen.

PCTurbo-186 boosts processing speed further by also using the native chip to create a disk-cache memory. A disk cache is a section of RAM that is set aside and used—under the control of disk-emulation software—to read information from a disk faster than usual and to retain the most frequently read sectors, such as disk directories, file-allocation tables, and index information from application programs. The computer looks first to the cache memory for information before it goes to a disk. For example, information indexes for a database file are automatically copied into the disk cache. Database operations that require the index use the copy in the disk cache instead of the file on the disk. Since information stored in RAM is available 50 times faster than information stored on disk, the disk

cache makes the computer operate faster.

"With the disk cache operating," says Susen Kay of Hannagan and Associates, a Chicago-based consultancy, "you don't get the long pause that you normally get for disk access. If you use a hard disk, there's almost no delay at all for users."

A two-processor system is something like a team. It's like giving a supervisor an assistant to make telephone calls and write letters. The supervisor can then concentrate on analyzing information and making decisions. He or she will operate a lot faster, and so do the chips. The 80186 chip is quite fast on its own, but the combination of the 80186 chip with an 8088 chip outstrips almost anything else on a desktop.

The 80186 chip is very much like the 8088, allowing it to operate many business applications. A few graphic-intensive applications won't operate on the system unless the extra hardware is

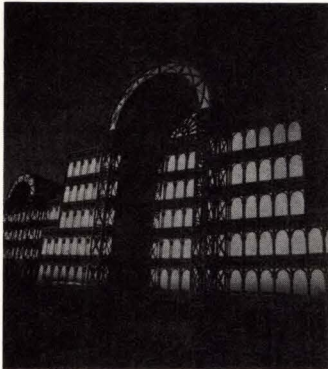
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For IBM PCs and compatibles

Vendor	Product/Description	Price	Circle
ABM Computer Syst. (714) 859-6531	ABM Superboard multi-function board Mem 12 memory expander 3270 SNA terminal emulator	\$260 to \$945 \$185 to \$995 \$895	414
Alloy Computer Products (617) 875-6100	PC-Slave/16 slave computer board	\$1,195	415
Apstek (214) 357-5288	Handi Series (1, 2, 3, 4) and Handi 1 Plus memory expanders and multi-function boards Handiware software	\$50 to \$639 \$305 to \$845	416
AST Research (714) 863-1333	Advantage! multi-function board and memory expander PC-Net network controller IBM 5251, 3780 terminal emulators	\$495 \$495 \$790 to \$895	417
Attachmate (206) 644-4010	Attachmate 3270 IBM 3270 terminal emulator	\$910 to \$1,195	418
CXI (415) 424-0700	3270 PC Connection IBM 3270 emulator 3278/79 Plus terminal emulator	\$1,595 \$1,145	419
Datatron (714) 554-8214	2megaboard memory expander (memory chips not included)	\$295 to \$375	420
Davong Syst. (408) 734-4900	Multilink network controller	\$700 and up	421
Digital Communications Assoc. (404) 448-1400	Irma IBM 3278 terminal emulator Irmalette network board	\$1,195 \$395	422
Extended Syst. (208) 322-7163	Sharespool printer-sharing buffer	\$595	423
IDE Assoc. (617) 275-4430	Ideamax 384 multi-function board and memory expander Ideacomm 3278 mainframe-communications board Ideanet network controller	\$295 and up \$995 \$275 to \$495	424

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BOOSTING MICROS

turned off so that the application program can run on the native system.

Another plug-in board that adds a second processor to a micro is PC-Slave/16 from Alloy Computer Products. This board plugs into an expansion slot and operates as a separate IBM PC-compatible computer. An inexpensive terminal attached to the micro gives users a complete second computer that uses the same disk drives and printer the first computer uses.

In effect, PC-Slave/16 creates a multi-user system. With more Slave boards plugged in, the system supports clusters of computers, which can mix 8-bit and 16-bit systems, share peripherals, and contain as many as 31 independent processing systems.

The computer on the Slave card is compatible with much popular business software and operates nearly twice as fast as an IBM Personal Computer. Data transfers are faster than those on ordinary networks, too, because the system uses bank-switched memory to deliver data.

Developed by Wave Mate Inc., Bullet-286 is still in the prototype stage, but it holds the promise of providing

IBM PC XT users with a system as fast and powerful as the new multi-user IBM PC AT. Bullet-286 is more than a plug-in, however. It actually replaces the main components (or "motherboard") of a PC XT.

Bullet-286's 80286 processor uses slightly different instruction sets than the 8088 chip, but there shouldn't be any compatibility problems, according to the vendor. Bullet-286 is designed to translate incompatible program instructions automatically before passing them to the 80286.

Most micro systems suffer from chronic memory shortage. Even systems that have been expanded to 640 Kbytes of RAM can have severe limitations, as operating systems, RAM disks, and sophisticated software gobble up memory.

For this reason, Datatron Inc.'s new 2megaboard is an exciting breakthrough. This plug-in board uses 256-Kbyte memory chips to expand a micro's RAM by as much as 2,048 Kbytes. With the micro's original 256 Kbytes, 2megaboard can boost a micro's RAM to 2.2 Mbytes. Datatron also offers software to create a disk cache and a printer spool. The

2megaboard card automatically uses whatever free memory is available for the cache and the spool, so users don't have to worry about whether or not they have enough memory left over for important applications.

Aside from making micro systems faster and more powerful, plug-in boards can make systems more communicative. The ability of a micro to communicate with other micros or with a mainframe is an important aspect of a micro's versatility and usefulness in large organizations. Without communications abilities, microcomputer users are isolated from much of the organization's other information systems. With the right data-communications board, the micro user can have all the advantages of instant access to the most current information anywhere in the organization.

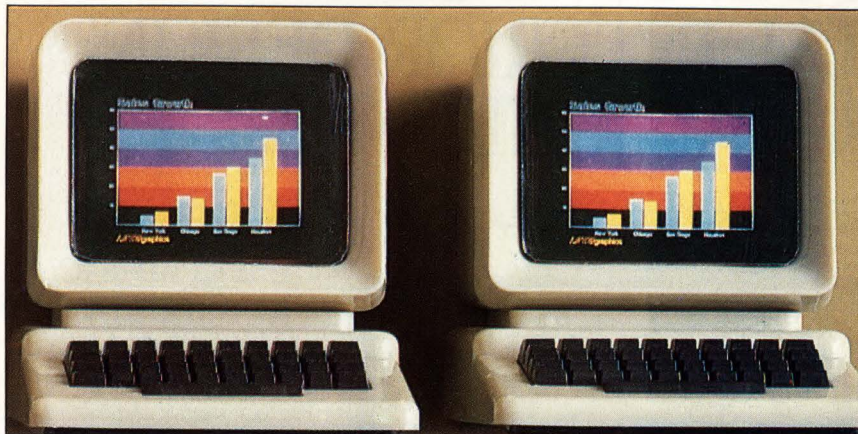
Several plug-in boards allow micro-to-mainframe communications. CXI Inc.'s 3270 PC Connection allows an ordinary IBM PC to function exactly like an IBM 3270 terminal, in effect imitating the terminal so that a mainframe or mini will recognize it. A PC equipped with the board can transfer data to and from a mainframe computer and, with

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Natural Microsyst. (617) 655-0700	Watson multi-function board and software	\$849 to \$998	425
Orchid Tech. (415) 490-8586	PCturbo-186 Blossom multi-function board PCnet network controller	\$1,095 to \$1,245 \$295 to \$795 \$495 to \$595	426
PC Tech. (313) 996-9690	XTender multi-processor network controller	\$3,995 to \$4,995	427
Profit Syst. (313) 647-5010	AT Power multi-function board Addram Elite memory expander Multigraph adapter board	\$495 and up \$475 to \$1,175 \$499 and up	428
Quadram (404) 923-6666	Quadnet network connector Quadlink Apple II emulator	\$995 and up \$680	429
STB Syst. (214) 234-8750	Graphix Plus II terminal emulator RIO Plus multi-function board	\$495 \$395 to \$845	430
Tecmar (216) 349-0600	Graphics Tender graphics enhancer	\$299	431
The Voice Connection (714) 261-2366	Introvoice I, II, III voice-control boards	\$460 to \$1,495	432
Wave Mate (213) 978-8600	Bullet-286 replacement motherboard		433
Wilcom (404) 993-4590	Asher modem and memory-partitioning board	\$795	434

BOOSTING MICROS



the help of windows on its display screen, simultaneously interact with as many as five different applications running on the mainframe. The 3270 PC Connection board also allows a micro-computer application, like a database or spreadsheet program, to communicate directly with the mainframe system.

One of the more intriguing new plug-in boards is Natural Microsystems Corp.'s Watson. Watson plugs into both a Touch-Tone phone and an IBM PC or compatible computer. Once installed, it provides a unique combination of functions, including a database for storing phone numbers with names, addresses, and the like; automatic dialing of any number in the database; "intelligent" phone answering; automatic time billing on telephone calls; an electronic calendar and datebook; and automatic telephone dialing to specific numbers at prearranged times.

"It's one of the most tangible benefits of office automation I can think of," says Philip James, director of strategic planning for Northrop Corp., the big defense contractor based in Haw-

thorne, CA. "I really appreciate the help I get in searching for a contact's phone number and then watching the computer dial it automatically. It saves time and energy."

Asher, a similar system, is available from Wilcom Inc. Although it lacks Watson's voice-recording feature, Asher allows storage of up to 250 phone numbers and names, and provides speed dialing and a memory-partitioning feature that electronically divides a single computer into separate systems that independently run their own software.

The combination of computer and telephone with automatic control gives rise to some interesting possibilities. For example, Watson can retrieve information on a sales contact as it dials his or her number, making it easy for a sales rep to recall the details of previous conversations. In addition, every call can be logged automatically, which makes for a better record of the day's calls and better use of telephone time.

Watson can also be used from outside the office by calling in and pressing the Touch-Tone buttons in a coded

order. The codes let the caller take control of the computer to retrieve needed information. Because chips that convert analog signals to digital signals have become so cheap and reliable, Watson can record spoken words on the computer's disk-memory system, making it a "store-and-forward" voice-message center.

A related hardware-enhancement innovation is Introvoice from The Voice Connection. Available as a plug-in expansion board or as a replacement keyboard, Introvoice allows almost any computer to recognize a user's voice and respond to spoken commands. The system can be used with most popular business software, according to the vendor.

Introvoice is easy to use. The user first puts the system in "training mode" and speaks the words the computer is to recognize. It only takes a few repetitions for the computer to record, analyze, and "learn" the voice patterns for a particular phrase. In a few hours, the computer can be made to respond to 160 different voice commands. The user can always interrupt an application and return to training mode to refine or change commands.

Hardware enhancements are often more powerful than the personal computers they improve. In corporations, evaluating a micro system means not only considering the computer itself and the software it runs but also assessing the upgrades, expansion boards, and add-on hardware options that are needed now and that may be required in the future. □

Robert Moskowitz is a free-lance writer based in Woodland Hills, CA.

ENHANCEMENT BOARDS

For non-IBM micros

Vendor	Product/Description	Price	Circle
EMC (617) 655-6600	Maxem series memory boards for Wang micros	\$375 to \$1,245	435
Kelly Computer Syst. (415) 960-0154	Slotsaver multi-function board for HP-150 micros	\$745 to \$995	436
Western Automation Labs (303) 449-6400	Seeker multi-function board for Texas Instruments micros	\$425 to \$1,095	437
Winterhalter (313) 662-2002	Datatalker communications and terminal-emulation boards for Apple Macintosh or MS-DOS micros	\$495 to \$1,495	438

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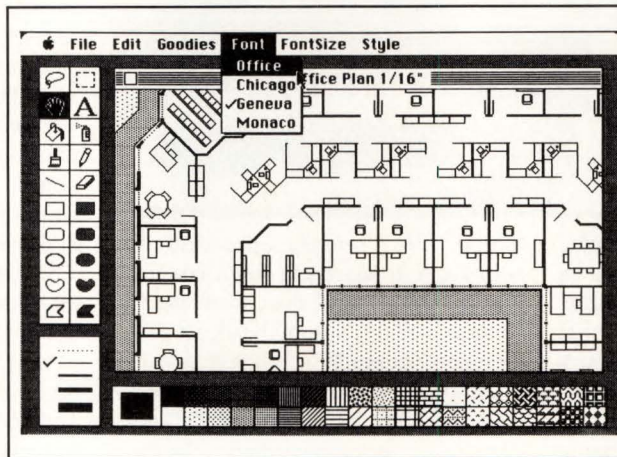
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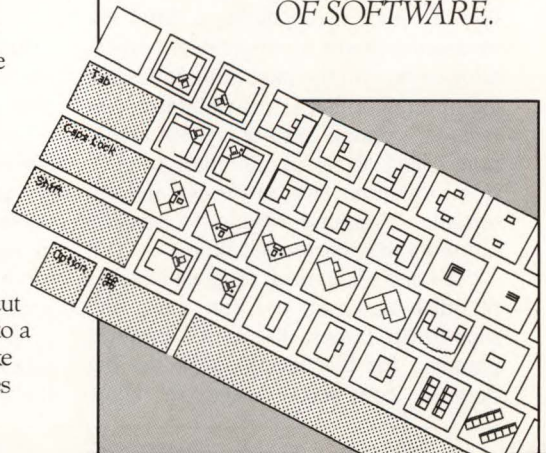
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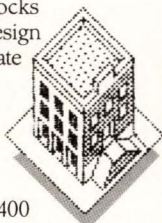


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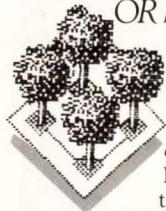
daVinci Building Blocks is a computer-aided design system that lets you create fully realistic, three-dimensional views of any architectural structure.



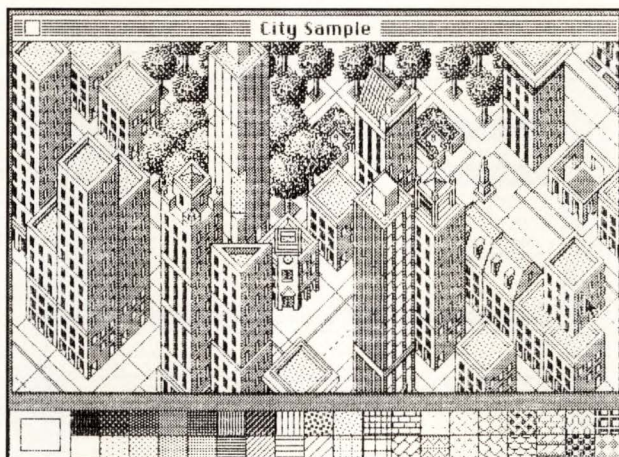
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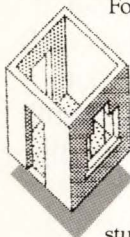
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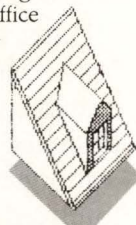
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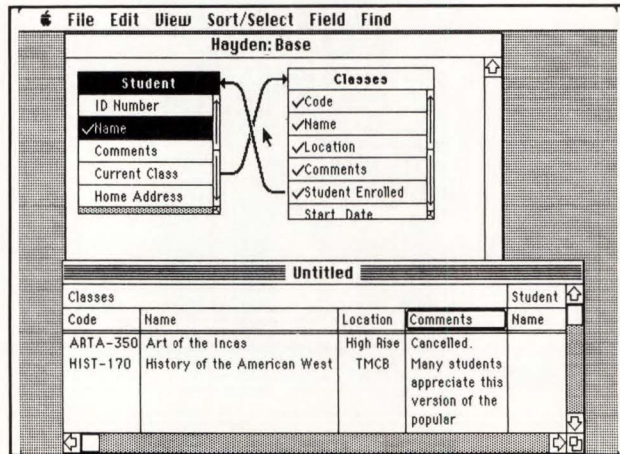
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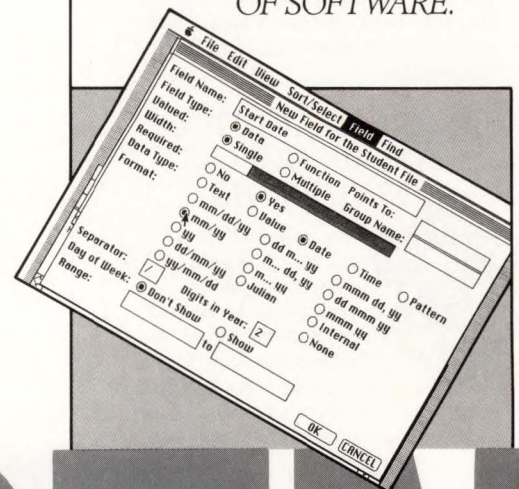
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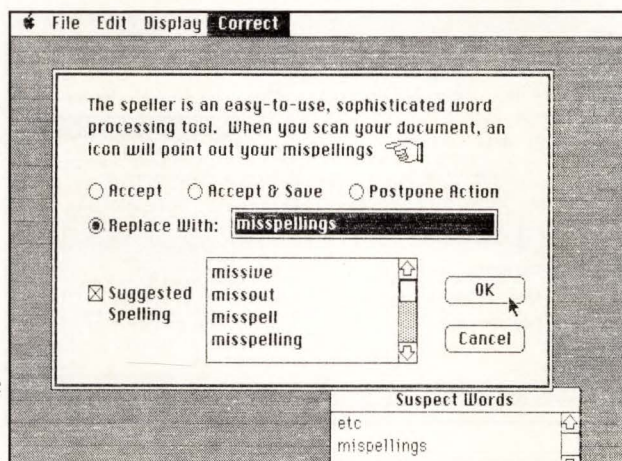
The Hayden:Speller spelling checker software program catches and corrects spelling errors and typos.

It's easy. Using pulldown menus and dialog boxes, you check your documents against a dictionary covering 97% of the most frequently used words in the English language. It's quick. Hayden:Speller can check a 5 page document in seconds. It's complete. You can easily create your own "personal dictionary" with up to 50,000 words per disk. You can then let Hayden:Speller check these words, too.

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Hayden:Speller either lists questionable words or points them out in context. You choose what to do next.

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A click of your mouse makes the necessary correction.

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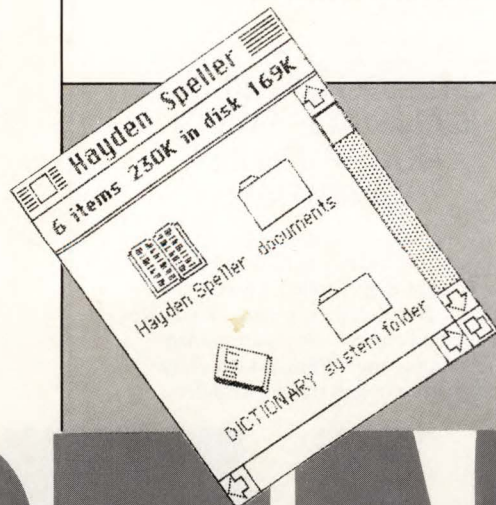
Hayden:Speller is fully compatible with MacWrite and Microsoft Word. It takes

advantage of their special Macintosh features, such as windows, menus, and of course, mice.

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"Why can't I ever find anything when I want it?" Does that sound familiar? If so, you need I Know It's Here Somewhere. I Know It's Here Somewhere is a simple, foolproof filing system for home, business, or school. It gives you a perfect way to catalog and store all that important information you know you have but can never seem to find when you need it most.

Users of large computer systems have been using similar programs for years. They call such programs database management systems. I Know It's Here Somewhere takes that basic, proven concept and simplifies it for everyday use.

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To create a format, simply use your mouse to position your basic headings, or fields as they're called, where you want them. That's all there is to it. I Know It's Here Somewhere takes it from there. You supply the information, and the program provides the organization.

The screenshot shows a window titled "I Know It's Here Somewhere" with a menu bar (File, Edit, Move, Search). The main area contains several overlapping forms:

- credit cards**: Company: American Express, Card no.: 1234 567890 12345, If lost, call: (800) CCR-AMEX, Expir. date: Oct. 85.
- subscriptions**: Magazine: Scientific American, Expiration date: Dec 1985, Period: [dropdown], Price: [dropdown].
- valuable**: Category: Jewelry, Item: Diamond ring, Insured value: \$3200, Insurer: Acme Bonding, Description: Heirloom. Circa 1890. 14 carat gold with one round diamond approx. 3/4 carat. Perfect condition with no visible flaws.
- notes**: Review insurance coverage before renewal date.
- insurance**: Type: Homeowner's, Insurer: Acme Insurance Co., Policy no.: ACN 1114 778.

At the bottom are buttons: (prev) (next) (find).

The program comes with several standard formats ready for immediate use. There are formats for filing stamps, books, slides, coins, correspondence, recipes, membership lists, names and addresses, credit card numbers, warranty information for household appliances, investments, insurance policies, financial data, capital assets, even the wine in your cellar.

But the program does much more than simply store your information away. It also lets you rearrange it or look at it in different ways.

You can do a sort. Find all the British stamps in your collection, for instance. Then you can do a second sort. Of all those British stamps, find the ones bearing a queen's picture. Or suppose you're doing a mailing, and you want it to go only to single people living within a certain ZIP code. No problem with I Know It's Here Somewhere. Two sorts, and

the information is ready for printout.

The program will find any piece of information for you even if you have nothing more to go on than a single letter within its name.

If you do a lot of bibliographies, I Know It's Here Somewhere gives you a special block at the bottom of your screen that you can use to store footnotes. You can then use the program as a word processor to correct, add, or delete your footnotes as you need.

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This screenshot shows a 'People' database view with fields for Name, Address, Business address, When, Where, Birthdate, and more. It also includes a 'notes' section with a text area for additional information. The interface is designed for easy data entry and viewing.

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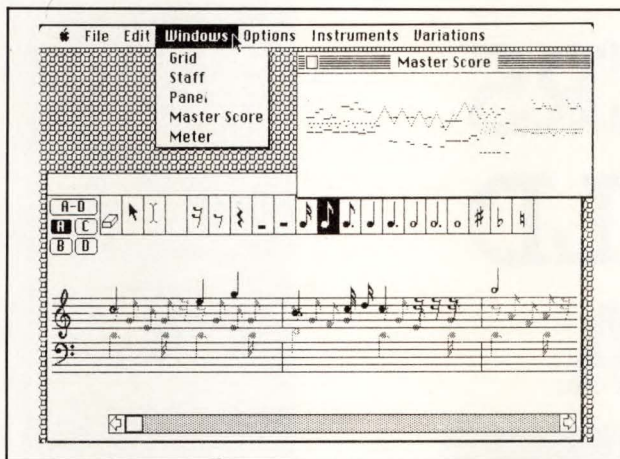
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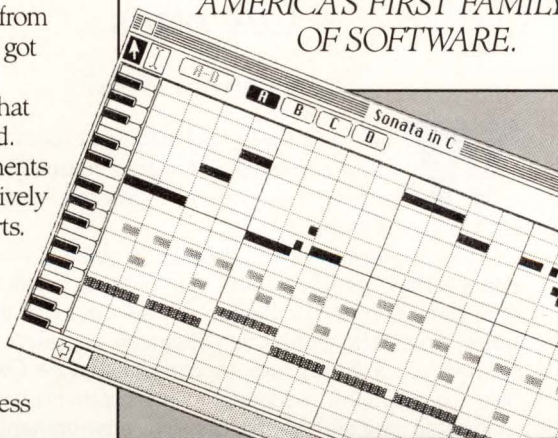
by playing classical and popular selections.

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O A R E F I N E D

USERS MOLD OA

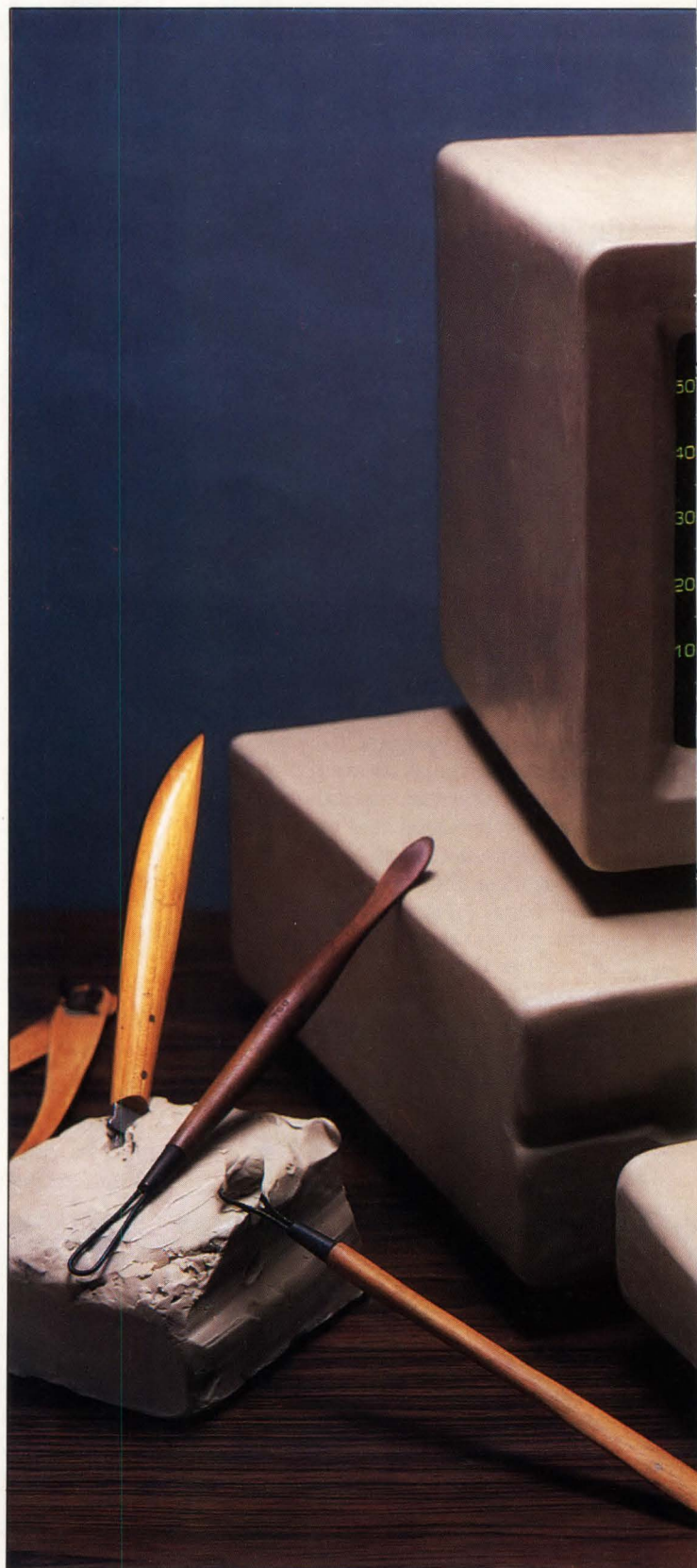
*Legions of personal computers
and users with purpose play
havoc with the best-laid
OA plans.*

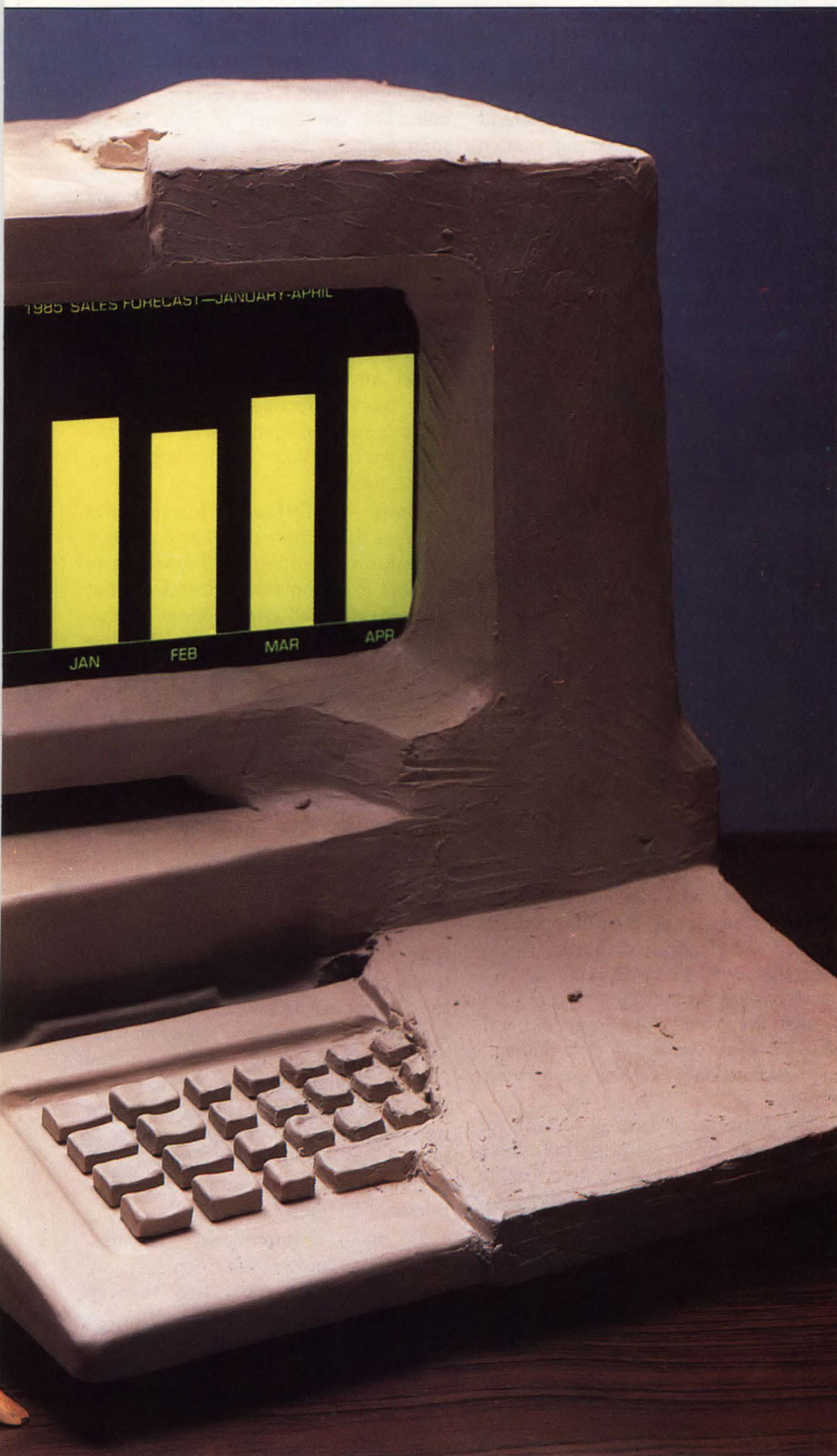
by Lamont Wood

What have those who have put together full-scale office-automation systems learned? What surprises have they encountered, and how have their plans changed?

The number-one lesson learned by office-automation managers is that "people issues" can make or break an automation plan. The needs, demands, and quirks of the users require close attention. Even financial considerations about hardware purchases pale by comparison. As OA is phased into organizations, managers' plans intertwine with users' reactions to changes in the physical environment, hardware choice and use, and executive-level expectations and cause original plans to evolve.

There has been a maturing among users. User resistance has given way to user insistence, and OA implementers have found them firm of purpose. Not many years ago, OA was word processing and users had to be convinced of its benefits. Now, users have become so comfortable with the idea of automated systems—and not just word processing—that the tide of resistance has reversed. Organizations, regardless of size, find employees demanding automation at a rate that outpaces their ability to supply systems and functions.





Bob Jones, computer-center director at the Department of Transportation in Washington, says: "Our biggest surprise has been the users' interest in the capabilities an automated system offers them. With our first system, there was some resistance. But now we have to drive users off with a stick. There's a greater awareness of what the system can do." It's becoming rare to encounter an employee who is cowed by technology, although that was the rule five years ago.

The personal computer was the next surprise: the technology that single-handedly altered MIS/dp's development plans for OA. "The influx of personal computers confused the OA implementation strategies of many corporations," says Christine Hughes of the Gartner Group, a Stamford, CT-based consultancy.

For others, the arrival of the personal computer forced them to start making plans. "Many managers were assuming that at some point they would buy minicomputers and run terminals off them with integrated software packages," says consultant David Terrie of the Yankee Group, Boston. "They got personal computers instead, which are easier for the organization to absorb," he says. Micros relieved managers of the task of envisioning and implementing complex OA systems. Even managers who had begun planning for OA before 1980 found that personal computers fit easily into their plans.

Bill Dean, director of technical services at PepsiCo Inc., the big soft-drink and food supplier in White Plains, NY, says that PepsiCo had not intended to automate its offices until employees started acquiring personal computers—and not just a few. When management saw the influx, it planned an OA system around the framework that personal computers formed.

Susan Walters, manager of office-systems planning in the MIS/dp department at Campbell Soup Co., Camden, NJ, reports a similar experience. "Office-automation planning started a year and a half ago—on demand. A master OA plan was drafted because of the grassroots movement toward

buying personal computers," she says.

One of the changes managers made to initial OA plans was a narrowing of focus—a conceptual retrenchment. The idea of turning the office into a utopia has become a search for solutions to specific problems. Although this sounds as basic as crawling before walking, many initial OA plans failed to address specific questions adequately. This retrenchment is also evident in the business world at large. "Managers are no longer concentrating on the abstract," notes David Terrie. "Why fantasize about the future when you can't get a decent distributed-database package today?"

Experience with initial OA plans has compelled managers to question the true utility of some technologies and view others in a new light. Electronic calendars are considered silly. Teleconferencing produces more meetings, instead of cutting travel expenses. And videotex is more appropriate as a broadcast form of electronic mail than a method of database access. Consultant Michael Hammer of Hammer and Co. Inc., Cambridge, MA, says: "Managers are beginning to think of office automation in terms of applications rather than utilities—using electronic mail to do something specific as opposed to just implementing electronic mail."

Kavin Moody, director of systems planning and research for the Gillette Co. a Boston-based health-care products manufacturer, explains how his employer decided to install, and then not to install, electronic mail. "We decided electronic mail is not a generic requirement at headquarters, but that it's needed by the field sales force—so it went first to where there is a true business need," he says. "Our broad objective was professional productivity, which gave rise to more specific objectives. We now know there's no magic formula for planning an automated office."

At Manufacturers Hanover Bank in New York, experience with a 700-user

pilot effort in office automation brought planners down to earth, recalls Kevin O'Donnell, vice president and manager of the office-automation group. "We thought it would change the lives of everyone," O'Donnell says. "But we found we had to attack one problem at a time and adapt to office automation in manageable chunks."

O'Donnell says his group follows a four-phase plan in each department it automates. The phases are introduction (putting in clerical applications), expansion (professional applications), integration (ties to outside data sources and document transfers), and maturity (the users can't get the job done without it). At each phase, problems and questions are addressed before they become overwhelming.

Another major change managers have to deal with after OA has been introduced is the way office-automation systems are cost-justified. Buyers are moving away from the justification that office automation will save money, and beginning to sell management on office automation's productivity-raising effects. Cost justifications based on labor/time displacements don't translate in practice. The new "soft-dollar" justification is based on a particular technology's contribution to business expedience.

Patricia Seybold, editor of the *Seybold Report on Office Automation*, Boston, says, "OA justification is often based on the expectations that projects can be done sooner or better, rather than that bodies can be replaced. We used to have debates over how much a workstation could cost," Seybold continues. "Now we know that management will spend \$5,000 on a workstation."

Bob Manson, director of systems for the Stop & Shop supermarket chain, headquartered in Boston, says that he has used "soft-dollar" justifications for automation from the very start. "Management never expected us to take any labor out of the company," Manson says, "although we are expected to do

more with the same labor force."

This change in the approach to cost-justification can probably be traced to the fact that benchmarking the results of office automation—the simple act of pointing to bottom-line savings—is difficult. The experience of Rita Speakman, manager of office-information systems in the information-systems department at E. I. duPont de Nemours & Co. Inc., the big chemicals manufacturer based in Wilmington, DE, is typical. "We tried to measure professional productivity and found it as hard to do as everyone says it is," she recalls. "Electronic mail promises to lead to better intracorporate communications and more effective operations, but there is no real, quantifiable measurement we can make of those largely abstract ideals."

However, DuPont's management believes that automation has a positive impact on operations and is willing to commit to automated systems on that basis. "Increased effectiveness is management's primary concern," says Speakman.

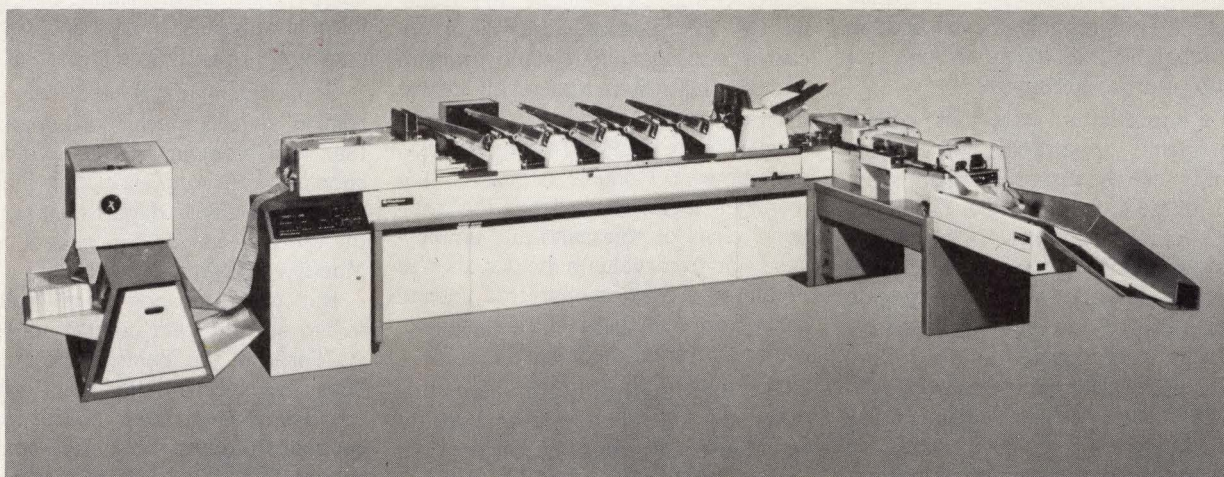
Bill Dean agrees: "We thought OA would allow us to analyze the changing business situation faster and react to it better. We've seen some of that, but we haven't figured out how to make benchmarks and guidelines against which to measure results. No one else we know has, either."

One problem all managers face when implementing initial OA systems is support. A staff is needed to train the users and run the system, but how much support and what kind of staff are needed? "Everyone's playing it by ear," asserts Terrie of the Yankee Group. "Managers are trying to define the ratio of support needed. Do you need one trainer to every 25 users, or one to every 100 users? There's a lot of money involved in supporting 5,000 personal computers."

In many organizations, the infrastructure-support requirements for automated systems are greater than either managers or users realized at the outset. Someone has to manage the files, do backups, manage the network, put employees on, take employees off, move employees, and keep the system running. The users don't want to do

"OA encourages a shift in professional functions to the clerical staff."

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 **Pitney Bowes**

these chores themselves. And there are no hard figures as to how many support staffers are needed to do them.

Joan Fairlie, administrator of office-automation support at Aetna Life & Casualty Co. in Hartford, CT, reports that her group has 31 specialists supporting 2,000 users. The support staffers wear beepers and operate a users' hotline. Fairlie says she encounters managers from other corporations who think a support staff of 31 is large. "But," Fairlie says, "these managers forget that although they may have a smaller group handling hardware questions, they probably have another group handling software questions. Our group provides full support."

It's important to note that without training and support, part of the investment is lost because equipment is not fully utilized. Says Fairlie: "Training and support are critical to success. If users are given the time to train, either in formal classes or on the job, they do much better. And readily available on-site support is critical."

Managers also report that living with OA has encouraged a shift in professional functions to the clerical staff. "In my department the secretaries no longer type," notes O'Donnell at Manufacturers Hanover. "The professionals have found that it's twice as fast to input memos on their personal computers than to write them on a yellow pad for secretaries to type. Meanwhile, the secretaries are doing jobs like scanning printouts for budget exceptions. Their responsibilities have expanded to take over some of the lower-level tasks the professionals had been doing."

At Campbell Soup, Susan Walters says a large portion of the tasks secretaries and professionals do can be expedited by personal computers, giving them more time to do other work. "Hopefully, this will lead to job enrichment. But managers must be made aware of the impact OA will have. If they don't plan for the free time the system provides, secretaries will spread out the work over the time they have or read the papers," she says.

There's not much talk about OA leading to any reshuffling of the organization. However, there's some agreement that such changes, when they

"Managers no longer believe OA will turn the office into utopia."

occur, result mostly from electronic mail. "Office automation changes the communications patterns among users," says John J. Connell, executive director of the Office Technology Research Group, a consultancy in Pasadena, CA. "A sales manager will broadcast a message about some problem into the mail system and get an answer from someone he or she would never have consulted. After this happens several times," Connell explains, "the manager begins to challenge the traditional chain of command and employees begin to reevaluate the way they're organized. Suggestions for change come from managers on the firing line, rather than from theorizers."

But the results of office automation most often mentioned are summed up by Manson at Stop & Shop: "We haven't eliminated any jobs. Instead, we've added departmental responsibilities without adding people. The quality of work coming out of some sections is higher, too. It used to be a question of whether some correction on a page made it worth retyping. Now, that's a moot point."

Other developments managers report invariably involve users. More than one manager is impressed by the creativity of the users once they grow accustomed to an automated system. "After personal computers are introduced, users start bragging about how much faster they get a certain job done, and then someone else will top that, and competition will emerge—there's peer pressure to find innovative ways of doing jobs," says consultant Connell. "The only way to improve the work of professionals and managers is to provide them the means to do it themselves, and personal computers serve as a catalyst in that process."

OA technology can support experiments in new management processes, Connell adds. "If, for instance, you put

employees on ad hoc committees in addition to their regular jobs, electronic mail can allow them to hold meetings without actually having to leave their desks and go somewhere else."

OA helps each manager expand his or her responsibilities, resulting in fewer layers of management, says Speakman of DuPont. "Our managers have been very careful to say that the changes have not all been caused by office automation—that good management had something to do with it—but they admit it would have been difficult without OA. And we are finding that an intelligent approach to data access is becoming more and more important."

Some managers believe the availability of data is much more important than any hardware issue. "We've responded with organizational changes within the MIS/dp department to meet the users' needs for data access," says Moody of Gillette.

But others respond with caution, noting security and control concerns. As Terrie at the Yankee Group says, "Easy but secure databases are needed. There is no real policy except caution. Prudence will delay some advances in office automation that are technically possible, and database access will be one of those."

Office-automation experts concur that there's a difference between personal professional capability and functions that enhance the office. Says Moody at Gillette: "If you're running Lotus 1-2-3 for yourself, your computing requirements leave with you. If you're running an accounting package for the department, the requirements don't leave with you. So if you have Fred in a corner programming an operational system, he should be documenting what he's doing."

The refined definition of OA is more realistic than its predecessors, but it's no more permanent than they were. Managers have come to the conclusion expressed by James Carlisle, president of the Office of the Future Inc. of Hoboken, NJ, when he says: "Office automation is an evolving process. The implementation never ends." □

Lamont Wood is a free-lance writer based in San Antonio, TX.

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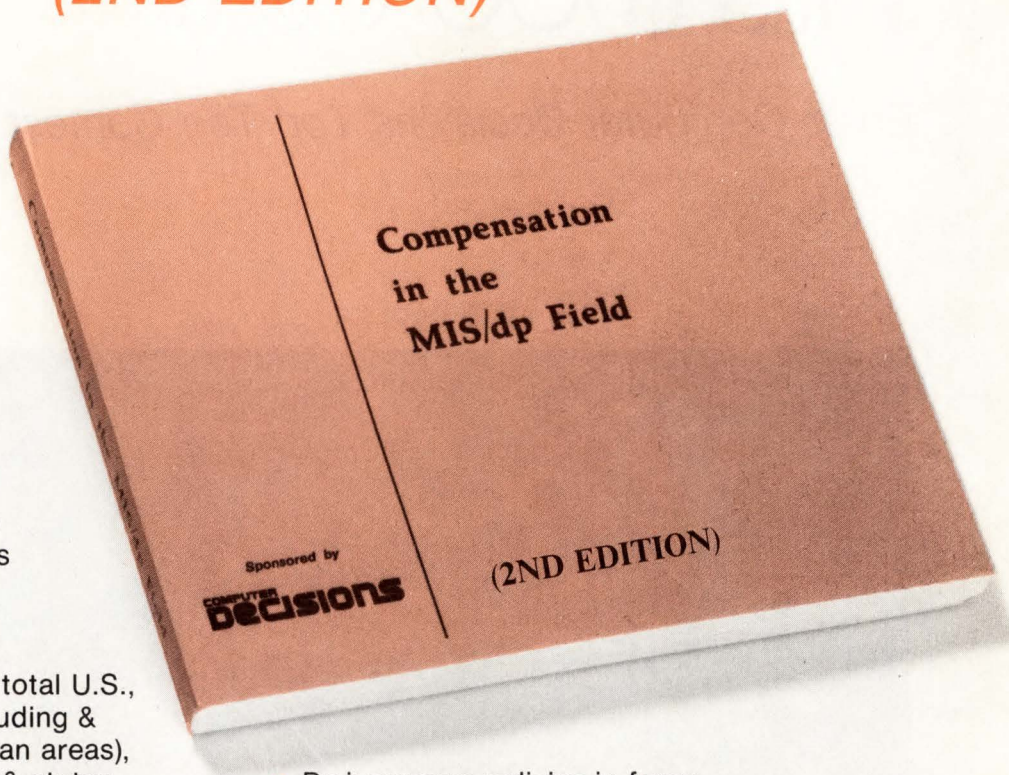
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Craig Bickel and Deb Schultz review expense trends with Express.

ECONOMICS LAB TAKES EXPRESS

Economics Laboratory Inc., a St. Paul, MN-based manufacturer, keeps track of its more than 1,000 cleaning products with Express, a database management system from Management Decision Systems Inc., Waltham, MA. Economics Lab began using Express on its IBM 3033 mainframe a year ago. The manufacturer's information-processing division uses Express for financial modeling, salary and travel planning, and data-management chores.

"One of our applications is profitability analysis," says Craig Bickel, manager of system services at Economics Lab. "With Express, we can determine changes in profitability by product. And there's no problem at all doing 'what-if' analyses."

Before the corporation had Express installed, Bickel's group tried to manually consolidate the annual totals from 150 expense categories into the information-processing division's \$10 million budget. But the numbers were

unwieldy and too many inaccuracies resulted. The system-service group had originally tried Visicalc, but found the models too small to handle all the details it needed to include.

Economics Lab's White Plains, NY-based consumer division uses Express for strategic planning. The consumer division accesses the corporate mainframe, located in St. Paul, with IBM 3279 terminals and keeps databases on the price, profits, and cost of promotion for individual products. Express helps the division project its annual \$30 million budget.

Executives in the consumer division believe Express provides invaluable decision-making support. "Express makes us more efficient and confident we're spending money effectively," says Greg Hunt, vice president of group products.

Express also helps the consumer division manage its coupon promotions, which are very important to Economics Lab. Many Economics Lab prod-

ucts carry cents-off coupons that must be tailored to specific market areas. "Without the analytical capabilities we get from Express, we'd be tempted to do our couponing on a nationwide basis," says Hunt. "But by knowing the market conditions, we can achieve better results by putting out a 35-cent coupon in one market, a 20-cent coupon in another, and a 50-cent coupon in another, depending on where the competition is stronger."

The Express database management system is available at a starting price of \$65,000. Because Economics Lab did not have a database management system prior to Express, it's difficult to pinpoint any savings the manufacturer has realized with the system. But tangible savings aren't the point, say company executives. The investment has paid off in increased productivity. "With Express, we get the big picture and see what other factors come into play. Quite simply, it makes us more productive," says Bickel. *Circle 520*

PRODUCTS / SYSTEMS

UNIX FAMILY

The Powernode 9000 series of 32-bit virtual-memory processors is the high end of a series of distributed systems based on Bell Labs' Unix operating system. It has 32 Kbytes of high-speed memory with an additional 32-Kbyte module available. The entry-level PN9005 has 4 Mbytes of main memory. Price: \$245,000. The PN9050 can accommodate an optional second processor, the Internal Processing Unit (IPU). Price: \$285,000. The PN9080, which includes the IPU, can have a total cache memory of 128 Kbytes. Price: \$385,000.

Gould Electronics, 6901 W. Sunrise Blvd., P.O. Box 9148, Fort Lauderdale, FL 33310.
(305) 587-2900. **Circle 201**

LARGE SYSTEM

The B4925 system handles heavy batch workloads and high-volume transaction processing. Price: \$395,000. The system supports 5 Mbytes of memory and data communications and is available in single- or multiple-cpu designs.

Burroughs Corp., Burroughs Place, Detroit, MI 48232.
(313) 972-7000. **Circle 202**

NEW IBM MODELS

The IBM 4361 Model 3 is a low-cost addition to the 4361 mainframe series. The new model, which can be upgraded to models 4 and 5, is priced at \$56,500 for 2 Mbytes of memory and \$71,500 for 4 Mbytes. Prices include a diskette drive, a display/prINTER

adapter, and a serial interface for non-IBM peripherals. Prices for models 4 and 5 have been reduced 10 percent to \$135,000 and \$180,000, respectively. System /38 models 20 and 40 are upgrades for the System/38 series. A Model 20 with 6 Mbytes of memory and one disk drive costs \$175,000. A model 40 with 12 Mbytes of memory and one disk drive costs \$250,000.

IBM. (Contact your local IBM sales office.) **Circle 203**

CRAY SUPERS

The entry-level Cray X-MP/11, /12, and /14 single-processor supercomputers have 1, 2, or 4 million words of static MOS central memory, respectively. The top-end M-MP/48 (see photo) has four identical cpus sharing an 8-million-word ECL bipolar central memory arranged in 64 interleaved banks. Each cpu offers gather/scatter and compressed-index vector instructions allowing for vectorized process-



ing of randomly organized data. Prices range from \$5 million to \$14 million. Also available are a 1,200-Mbyte disk drive and a solid-state storage device with 64 to 1,024 Mbytes of fast random-access secondary MOS memory that has a maximum transfer rate of 2,000 Mbytes per second.

Cray Research Inc., 608 Second Ave. S., Minneapolis, MN 55402.
(612) 333-5889. **Circle 204**

ENGINEERING SYSTEMS

DS (Distributed Systems) 4000 and 4200 graphics workstations are designed for engineers doing a variety of tasks, such as product design and analysis. Prices are \$35,500 to \$44,500. The Eclipse MV/4000 small-cluster 32-bit system runs Data General's CEO office-automation software. Price: \$34,800 for 1 Mbyte of memory and \$38,400 for 2 Mbytes. Each system is housed in a compact cabinet that contains up to two 5¼-inch Winchester disks, two floppies, seven 15-inch boards, Ethernet networking interface, and power supply. The DG/UX operating system, based on Bell Labs' Unix, is \$1,500. A standard protocol for local-area network connections under DG/UX on the above systems is \$2,000.

Data General, 4400 Computer Dr., Westboro, MA 01580.
(617) 366-8911. **Circle 205**

ENHANCED GRAPHICS

An update of the PC2000E Studio Computer graphics system features total antialiasing, a virtual palette of 230,000 colors, a total palette of 16 million colors, and enhanced painting capabilities, including airbrushing. Price: \$39,995. The Image-Grabber digitizing camera allows the user to enter an image digitally into the PC2000E for painting, editing, or airbrushing. Price: \$9,995. The Automatic Data Illustrator is a business-graphics package for the PC2000E. With the Matrix QCR film recorder, it can produce slides in minutes.

Artronics Inc., 300 Corporate Court, P.O. Box 408, South Plainfield, NJ 07080.
(201) 756-6868. **Circle 206**

PRODUCTS / PERIPHERALS

MATRIX PRINTER

Output Technology's Model OT-700 is a 700-character-per-second (cps) matrix printer for micros and minis

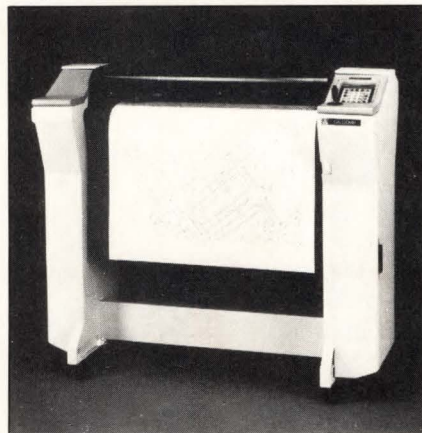


with an RS-232 interface. Price: \$1,495. Model OT-700 offers correspondence-quality printing at 350 cps and dot-addressable graphics.

Output Technology Corp., 606 110th Ave. N.E., Bellevue, WA 98004. (206) 453-9794. **Circle 207**

PLOTTER/PRINTER

The 5700 series of electrostatic plotter/printers offer speeds up to 2 inches per second and resolution up to 400 dots per inch for circuit design, mechanical design, and architectural, engineering, and construction applica-



tions. Prices range from \$24,995 for a 24-inch, 200-dot-per-inch model to \$39,995 for a 36-inch, 400-dot-per-inch model. Series 1040 pen plotters feature eight pens, full plotting capability up to ANSI size E or ISO size AO, an eight-pen turret with automatic pen capping, and an integrated communications interface. Price: \$8,495. There is both a cut-sheet-only model and a model with both cut-sheet and roll-feed modes.

Calcomp, 2411 W. La Palma Ave., Anaheim, CA 92801. (714) 821-2142. **Circle 208**

INKJET PRINTER

The Xerox/Diablo C-150 inkjet printer handles both text and color graphics. Priced at \$1,295, it creates a variety of shades using four primary colors (cyan, magenta, yellow, and black) and three secondary colors (violet, green, and red). The Diablo C-150, which interfaces with most personal computers, including IBM and Apple models and their compatibles, prints at 20 characters per second, has a resolution of 120 dots per inch, and can be used with plain paper, transparencies, or clay-coated paper. The printer runs many software programs under CP/M, MS-DOS, and PC-DOS, including Lotus 1-2-3 and Press'n'plot.

Diablo Systems Inc., P.O. Box 5030, Fremont, CA 94537. (415) 498-7000. **Circle 209**

VIDEO-DISPLAY UNIT

The Kimtron Model KT-7 video-display terminal features a 12-inch high-resolution tilt-and-swivel screen, keyboard-height adjustability, and user-selectable hidden or embedded

display attributes. Price: \$595. Model KT-7 provides emulations for Televideo models 910, 920, and 925,

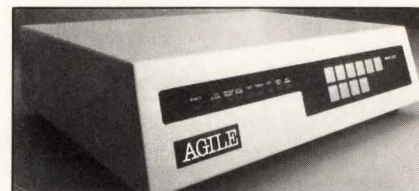


and code compatibility with models 914, 924, and 950. Compatibility with IBM PC, DEC VT52, VT100, and VT132, or Data General D100 and D200 is optional.

Kimtron Corp., 2225-I Martin Ave., Santa Clara, CA 95050. (408) 727-1510. **Circle 210**

PROTOCOL CONVERTER

Agile Model 6287 provides APL applications support to let IBM 3274/76 users choose from a greater variety of printers, including the Xerox 2700 laser printer. Price: \$2,195. The



Model 6287 accommodates printers with either RS-232 or Centronics parallel interfaces. The Model 6287 is available without APL capability for \$1,595.

Agile Corp., 4041 Pike Lane, Concord, CA 94520. (415) 825-9220. **Circle 211**

PRODUCTS / SOFTWARE

FILE TRANSFERS

Filepro Transfer allows users to transfer entire files from one type of computer to another. Price: \$145 to \$240. It transfers data, screens, edits, reports, output formats, labels, applications, and processing tables.

The Small Computer Co. Inc., 230 W. 41st St., New York, NY 10036.
(212) 398-9290. **Circle 212**

DOCUMENT MANAGER

CrystalSeries, a document-management system for micros and minis under Bell Labs' Unix operating sys-

tem, features such functions as word processing and document merging. Price: \$2,500. Up to 16 users on a micro system can exchange documents.

Syntactics Corp., 3333 Bowers Ave., Santa Clara, CA 95054.
(408) 727-6400. **Circle 213**

DATA CONVERSION

The Structure Blaster is a high-speed data-conversion package for complex data structures like graphical databases and integrated-circuit libraries. Prices range from \$440 to \$4,000. The package allows data structures to be read or written into a file with a sin-

gle procedure call; data structures can be altered without changing code.

Xidak Inc., 530 Oak Grove Ave., Menlo Park, CA 94025.
(415) 324-8745. **Circle 214**

ONLINE DATA MONITOR

Supertracs online batch-teleprocessing monitor enables a host mainframe to perform concurrent data collection and transmission to different sites on different lines. Price: \$12,000 for DOS version and \$15,000 for OS version.

Sterling Software Marketing, 1007 Seventh St., Sacramento, CA 95814.
(916) 441-7234. **Circle 215**

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PRODUCTS / MICROS PLUS

WORDSTAR ENHANCEMENT

Micropro offers two enhanced versions of Wordstar, its popular word-processing package. Priced at \$495, Wordstar 2000 features screen windows for simultaneous editing of up to three documents. The package, which can incorporate output from many popular spreadsheets, includes Micropro's Mailmerge, a calculator, a spelling checker, an undo command to restore text, and a sort function. Priced at \$595, Wordstar 2000 Plus includes all the features of Wordstar 2000 plus a database system. It features electronic-mail and Telex capabilities, as well as an indexing system. Both packages run on the IBM PC, PC XT, PC AT, and compatibles under PC-DOS versions 2.0, 2.1, and 3.0.

Micropro International Corp., 33 San Pablo Ave., San Rafael, CA 94903.
(415) 499-1200. **Circle 344**

WORD/IMAGE PROCESSING

Datacopy's Model 700 Word Image Processing System (WIPS), based on flatbed scanner technology, uses Datacopy's WIPS software and works with most word-processing and database-management software for the IBM PC XT and PC AT. The system, priced at under \$4,000, includes an image scanner, imaging interface, and WIPS software. The system can be used to create complex documents



and databases by integrating images, text, and numbers. Character Image Recognition, optional software for the WIPS system, converts document text to standard ASCII code and processes coded text using standard word-processing software. Version CIR-1, with two typewriter fonts, costs \$695; Version CIR-2, with two fonts and an interactive-learning feature that recognizes any font or letter pattern, costs \$1,995.

Datacopy Corp., 1215 Terra Bella Ave., Mountain View, CA 94043.
(415) 965-7900. **Circle 345**

APPLE II GRAPHICS

Charts Unlimited expands the graphics functions of Apple II computers. Price: \$195. The program comes with 36 predefined objects, 36 symbols, and memory space for 26 user-defined objects, allowing users to produce various types of charts and graphs. Users can change the dimension of objects from the keyboard and can enter text anywhere on the worksheet.

Graphware Inc., 5084 Mosiman Rd., Middletown, OH 45042.
(513) 424-6733. **Circle 346**

BUSINESS GRAPHICS

Excel is a business-graphics system that includes a graphics-file management system, communication capabilities, and IBM compatibility. Price: \$12,000 to \$18,500. The system consolidates spreadsheets into a single graph for comparison and lets users annotate images, write on blank screens, or highlight data electronically. Excel can be used to create text slides, schematic diagrams, and free-

form images, which it can then produce as 35-mm slides, color transparencies, or other hard copy suitable for formal presentations.

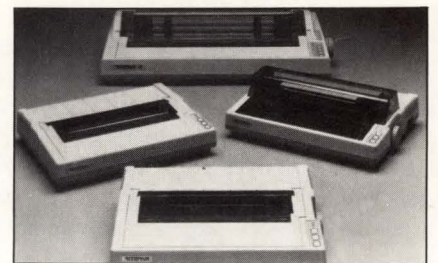
Digigraphic Systems Corp., 10273 Yellow Circle Dr., Minnetonka, MN 55343.
(612) 935-9111. **Circle 347**

NETWORK INTERFACE

The Elan/PC gives an IBM PC or compatible the capabilities of an IBM 3270 terminal. Price: \$995. The Elan/PC connects to the Braegen Elan coaxial network and communicates with 3270-compatible Braegen 80XX Series controllers. PCs can access data from up to 16 local and remote mainframes.

The Braegen Corp., 525 Los Coches St., Milpitas, CA 95035.
(408) 945-1900. **Circle 348**

PORTABLE PRINTERS



Inforunner has introduced a line of portable printers that fit into a standard-sized briefcase. The Riteman Plus dot-matrix printer (\$399) prints at 120 characters per second (cps). The Riteman Blue Plus dot-matrix printer (\$499) features a speed of 140 cps, 128 character modes, logic-seeking graphics, a quad-density graphics mode, and nine international character sets. The Riteman II professional-

PRODUCTS / MICROS PLUS

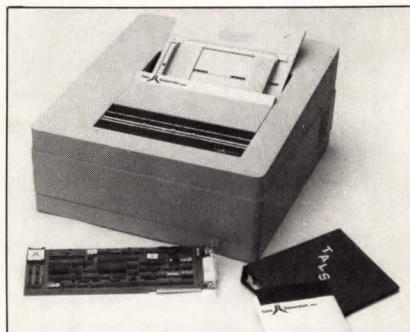
quality dot-matrix printer (\$549 to \$599) features 160-cps print speed, 256 programmable characters, 128 character modes, and 2 Kbytes to 8 Kbytes of RAM. The Riteman 15 dot-matrix printer (\$799 to \$849), which has a print speed of 160 cps and offers 136-column printing, features 2 Kbytes to 8 Kbytes of RAM, 256 programmable characters, and six graphics modes. The Riteman LQ (\$299), a letter-quality printer, features a 96-character ASCII set, 12-cps print speed, and bidirectional printing. The Blue Mac dot-matrix printer (\$549 to \$599) works with Macintosh and Apple IIc micros.

Inforunner Corp., Airport Business Center, 431 N. Oak St., Inglewood, CA 90302.

(213) 453-6688.

Circle 349

IMAGING DEVICES



The Talus Image Management System incorporates the Model T20/20 PC image scanner (\$4,995), the Model T20/22 image-converter board (\$1,295), and Talscan image-management software (\$595). The system,

which runs on the IBM PC, PC XT, or compatibles, digitizes images of documents, forms, handwritten notes, press clippings, or line drawings, and displays them via a bit-mapped display. Once the image has been captured, the converter board and software allow the image to be stored on disk.

Talus Corp., 985 University Ave., Los Gatos, CA 95030.

(408) 354-5322.

Circle 350

Personal printer guide: Star Micronics (New York) now offers a 16-page booklet that describes most types of printers, shows samples of each printer type, and offers other information to help the prospective buyer choose a printer.

Circle 351

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CIRCLE 57

141

MULTI-USER SYSTEM

System 2220 supports up to 64 users and features a 12.5 MHz Motorola 68000 cpu with a 4-Kbyte cache memory. Prices begin at under \$30,000. The system is rack-mounted and contains from 1 Mbyte to 12 Mbytes of RAM. It can use up to four 5¼-inch disk drives via an SMD interface. Nine programming languages, along with spreadsheet, word-processing, and relational database software, are available.

Wicat Systems Inc., 1875 S. State, Orem, UT 84057.
(801) 224-6400.

Circle 229

SECURITY SOFTWARE

RiskPac guides the IBM PC XT user through sets of questions, assessing security risks in a data-processing system, pinpointing where controls can be improved, and automating the first steps of data-center contingency planning. The basic survey and reporting system is \$595. RiskPac is also available as a custom system with user-specific questions and reports. The price for adapting the software to specific organizations starts at \$5,000.

Profile Analysis, 440 Main St., Ridgefield, CT 06877.
(203) 431-8720.

Circle 230

DECISION SUPPORT FOR IBM

Several additions to the Irma line of decision-support interfaces allow the IBM PC to be used as a decision-making tool with access to mainframe databases. The Irma interface, priced at \$1,195, links the PC to an IBM 3270 controller, allowing the PC to emulate a 3278 or 3279 terminal. Irmaline allows an IBM PC or asynchronous-terminal user to communicate with a remote mainframe without front-end communications support or long-

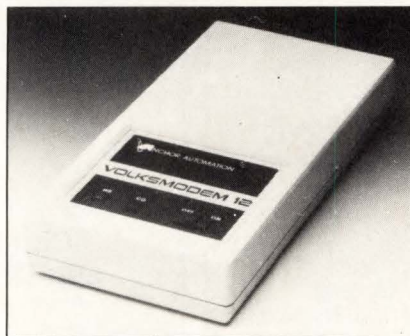
distance charges. Price: \$1,295. Irmaline works with a variety of IBM, DEC, DG, and other terminals. For \$1,395 it can be bundled with Irmalette, which gives Irma capabilities to remote PC users. Irmaprint allows asynchronous ASCII output peripherals such as printers or display-only monitors to operate on the IBM 3270 network. Price for serial or parallel version is \$1,295. Irmacom gives the IBM PC a variety of SNA and BSC emulations. There is a choice of five emulation programs, priced at \$895 for one board and diskette and \$495 for each additional package. Iрмаkey/3270 looks like an IBM 3270 PC keyboard but has four additional Irma function keys. The user can select any four Irma functions, such as 3278 emulation, file transfer, CICS file transfer, and TSO file transfer. Price: \$329. Irmalink/CICS permits file transfer between an IBM mainframe under DOS/VSE and CICS or MVS and CICS, and a micro under MS-DOS 2.0 or PC-DOS 2.0. Price is \$9,995 for the mainframe and \$400 to \$500 for each PC. Irmalink/TSO offers file transfer for text and binary data and runs with Irma or Irmalette. One-time handling fee is \$100.

Digital Communications Associates Inc., 303 Technology Park, Norcross, GA 30092.
(404) 448-1400.

Circle 231

SMART MODEM

Volksmodem 12, which operates at 300 to 1,200 baud, can be used on standard two-wire dialup networks.



Price: \$299. The modem, which connects to terminals or computers via an RS-232C port, features Bell 103/212A compatibility, serial-command operation, auto-dial and auto-answer, tone and pulse dialing, and dial-tone and busy-signal detection. Operating controls include a voice/data switch, two modem switches, two status-indicator lights, and five set registers.

Anchor Automation Inc., 6913 Valjean Ave., Van Nuys, CA 91406.
(818) 997-7758.

Circle 232

COMPATIBLE DISKS

The Discon System provides instant compatibility between CP/M and PC-DOS software formats. The system, which includes a central-processing unit, keyboard, screen, four disk drives, hardware, and software, costs \$6,995. The price without the keyboard and screen is \$5,995. The system presently works with more than 150 different disk formats.

Pacifica Technology, 11696 Sorrento Valley Road, San Diego, CA 92121.

(619) 453-2945.

Circle 233

LASER PRINTING

LaserRight, priced at \$4,495, offers automatic laser printing for the clustered work environment. The printer's cluster controller allows up to three computers to share one Hewlett-Packard 2686A Laserjet printer. Compatible with most personal computers with an RS-232 or RS-422 interface, LaserRight features 128 Kbytes of memory and works with such software as Lotus 1-2-3 and Displaywriter 2. The Hewlett-Packard Laserjet printer, the print engine for LaserRight, can print 8 pages per minute and offers a range of fonts.

Extended Systems, 6062 Morris Hill Lane, Boise, ID 83711.
(208) 322-7163.

Circle 234

DISTRIBUTED NETWORKING



PACX 2000, a software-based distributed-switching system, functions as both a local-area and wide-area network. Price: \$180 to \$240 per channel. With the system, workstations and micros can communicate with each other or with a mainframe. Features include 16-bit-microprocessor technology, high bandwidth and fiber-

optics, an international digital communications data rate of 64,000 bits per second (bps), and asynchronous data rates of up to 19,200 bps.

Gandalf Data Inc., 1019 S. Noel Ave., Wheeling, IL 60090.
(312) 541-6060.

Circle 235

NETWORK MANAGEMENT

The Prophet Network Management System for multiplexer networks manages complex data networks by supporting design, configuration, real-time network monitoring, and diagnostic functions. Price: \$5,000 and up. Prophet combines statistics with network topological diagrams, port-buffer utilization charts, and port profiles to produce an accurate, up-to-date picture of the entire network. Prophet, which runs on the IBM PC, includes menus and command prompts. When connected to a multiplexer-switching

network or quad-switching multiplexer (QSM) network, Prophet offers single-point control of both the overall network and individual ports. With Prophet, a QSM network of 64 nodes with 1,000 or more ports can be configured and controlled from a single point.

Timeplex Inc., 400 Chestnut Ridge Rd., Woodcliff Lake, NJ 07675.
(201) 930-4600.

Circle 236

MODEM-USE MONITOR

Modem Use Monitor Model 01-10-0269 monitors the carrier-detect lead of up to 64 modems. Price: \$2,300. The unit contains a real-time clock and develops a graphic display with a dot-matrix printer. Users can locate inoperative phone lines as well as faulty modems.

Communication Devices Inc., One Forstmann Ct., Clifton, NJ 07011.
(201) 772-6997.

Circle XXX

RESEARCH REPORT

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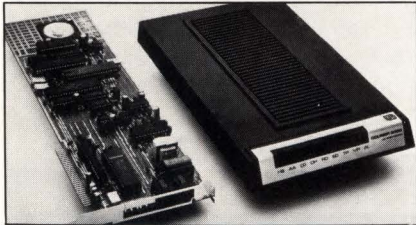
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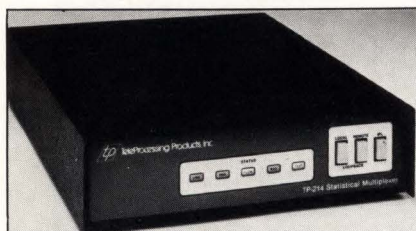
INTEGRAL MODEMS



The stand-alone Courier 2400 and integral Microlink 2400 modems provide complete dial-up data-communications capabilities at rates of up to 2,400 bits per second. Both models are priced at \$895. Microlink 2400, for use with the IBM PC and compatibles, includes enhanced Tel-pac telecommunications software. Courier 2400 can be used with any computer or ASCII terminal with an RS-232C serial interface. Both models are auto-dial, auto-answer, asynchronous modems. Both feature call-duration reporting, modem-status indicators, help screens, repeat command, quote modes, and call-progress detection.

U.S. Robotics Inc., 1123 W. Washington Blvd., Chicago, IL 60607.
(312) 733-0497. **Circle 216**

FOUR-CHANNEL STAT MUX



Statistical multiplexer Model TP-214 lets users connect four asynchronous terminals with input speeds from 110 bits per second (bps) to 9,600 bps to either a synchronous modem, one or more ports of a multi-port synchronous modem, or a data-service unit. Price: \$1,350. The model can provide up to four 2,400 baud asynchronous data paths over one 2,400 bps

modem. It ensures correct reception of each data block with a 16-bit frame-check sequence. The device also features remote-test capability, front-panel diagnostics, and provisions for the use of X-on, X-off signals.

Teleprocessing Products Inc., 4565 E. Industrial St., Simi Valley, CA 93063.
(805) 522-8147. **Circle 217**

PROTOCOL CONVERTER

The 16-channel Micro7400 protocol converter emulates all standard IBM 3270 terminal functions, allowing asynchronous ASCII terminals and personal computers to access IBM mainframes. Price: \$5,650. Attached asynchronous devices can function as IBM 3278 display stations, IBM 3279 color-display stations, or IBM 3287 printers. Other features include automatic log-on, inbound priority levels, and banner and broadcast messages. Command Port, a password-protected terminal interface that's separate from the 16-channel interface, allows connection of a terminal for management operations that include configuring, monitoring, and troubleshooting.

Micom Systems Inc., 20151 Nordhoff St., Chatsworth, CA 91311.
(213) 998-8844. **Circle 218**

VOICE-MAIL SYSTEM

Cindi 400, a series of telephone-connected, computer-based voice-mail systems, serves up to 512 users and records up to 16 hours' worth of messages. Prices range from \$9,900 for a two-port system with one hour of message storage to \$40,000 for an eight-port system with 16 hours of message storage. Designed with a modular architecture, the Cindi 400 series is used with Touch-Tone phones.

Genesis Electronics Corp., 103 Woodmere Rd., Folsom, CA 95630.
(916) 985-4050. **Circle 219**

DATA COMPRESSOR

A text processor, Alice (Algorithm for Information Compression and Encryption), cuts ASCII text and data telecommunications costs by compressing text before transmission and expanding it after reception. Price: \$79 without encryption, \$129 with encryption. The package runs on any PC-DOS or MS-DOS computer with two disk drives and 128 Kbytes of RAM. It encrypts data with up to an 80-character keyword, performs various control-code filtering functions, and converts files.

Bedlington Computer Laboratory, P.O. Box 60741, Sacramento, CA 95860.
(916) 344-5064. **Circle 220**

COMMAND CENTER

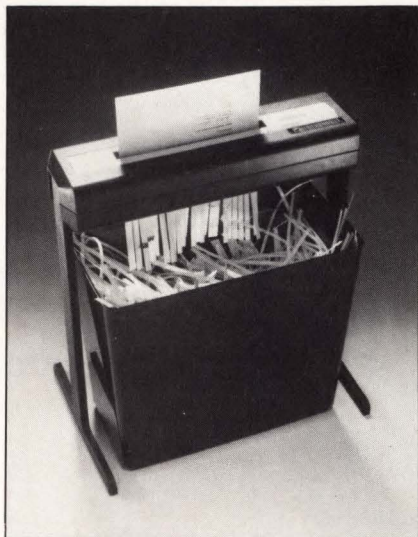
Infinet's enhanced network command center includes the EMS-II network-control system (\$16,500), the PMS-II performance-measurement system (\$6,000), and the NIS 90/60 network-information system (\$150,000). With the integrated command center, users can monitor, test, reconfigure, and manage both analog and digital network lines from a central site. The NIS 90/60 system features a report generator that assembles and formats data from the database and presents the information in graphical and tabular format. The EMS-II system provides advanced analog parameter measurements. The PMS II system uses line-monitoring units to monitor 3270 SDLC and 3270 bisynchronous activity and send the information to the NIS 90/60 database.

Infinet Inc., 6 Shattuck Rd., Andover, MA 01810.
(617) 681-0600. **Circle 221**

Help facility: An online help facility is now available for KnowledgeMan software from Micro Data Base System, Lafayette, IN. **Circle 222**

PRODUCTS / SECURITY

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The Boston Personal Paper Shredder Model 1690 shreds paper, microfiche, microfilm, and plastic credit cards. Price: \$200. The shredder accepts documents up to 8¾ inches wide and shreds up to five sheets of paper at once.

Hunt Manufacturing Co., 230 S. Broad St., Philadelphia, PA 19102. (215) 732-7700. **Circle 223**

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The Multisentry computer-access control terminal offers security for large multi-port data systems and computer networks. Price: \$21,500 for 16 lines; \$800 for each additional line. Multisentry operates on the analog side of a host modem and allows only authorized callers to gain access to the modem. It prompts the caller for identification; if a valid access code is entered, Multisentry clears the call for access. If an invalid code is entered, the call is diverted and an alarm activated. Multisentry features call-

answer and call-back. Its modular design allows expansion to up to 128 telephone lines. The system can be accessed by either Touch-Tone phones or by voice commands with rotary-dial phones.

Tact Technology, 100 N. 20th St., Philadelphia, PA 19103. (215) 569-1300. **Circle 224**

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Omni Tech Corp., 1455 N. Barker Rd., Brookfield, WI 53005. (414) 784-4178. **Circle 225**

ENCRYPTION SOFTWARE

P/C Privacy, an encryption package, offers users privacy on disks or over electronic-mail systems. Price: \$140 for MS-DOS, PC-DOS, and CP/M systems; \$95 for Apple and Macintosh micros. P/C Privacy, which encrypts any type of file, gives users control of the encryption process with a keyword or phrase.

MCTel, 3 Bala Plaza E., Bala Cynwyd, PA 19004. (215) 668-0983. **Circle 251**

SECURE PORT CONTENTION

Dialcontender, an automatic port-contention device, makes a host com-

puter more accessible to authorized users while keeping it safe from intruders. Price: \$1,395 to \$1,545. Authorized users call the computer for an open port; if a port is free, Dialcontender asks for the caller's ID and password, hangs up, and verifies the information. Then it immediately calls the user back at the number that matches the user's ID and password in its security directory. Dialcontender is configured for four modems and serves three computer ports.

Backus Data Systems Inc., 1440 Koll Circle, San Jose, CA 95112. (408) 279-8711. **Circle 227**

VERIFICATION SYSTEM



The Codercard computer-security system combines hardware and software interchanging data between user-oriented subsystems and a central-verification subsystem. For quantities of 1,000 or more, Codercards are priced from \$80 to \$100 each, attached card readers from \$150 to \$170 each, and embedded card readers from \$257 to \$315 each. The system may be used with terminals, workstations, or personal computers accessing either a host computer, front-end processor, or network-control node.

Codercard Inc., 2902 Redhill, Costa Mesa, CA 92626. (714) 662-7689. **Circle 228**

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SCI, P.O. Box 1216, Columbus, OH 43216.

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\$20,000, analyzes and manipulates data on personnel, objectives, and resources, responds to what-if queries, and reports on single- or multi-dimensional matrices.

Deltacom Inc., 1200 Bustleton Pike, Feasterville, PA 19047.
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(817) 346-0561.

Circle 265

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CIRCLE 70

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Matterhorn Inc., 9615 Girard Ave. S., Bloomington, MN 55431.

(612) 881-4666.

Circle 247

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Triad Power Systems, 10362 Miller Rd., Dallas, TX 75238.

(214) 341-8700.

Circle 248

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Omnium Corp., 203 N. Second St., Stillwater, MN 55082.

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Datum Filing Systems Inc., 270 Adams Blvd., Farmingdale, NY 11735.

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Circle 250

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YOUR CAREER

by Mary Miles, New England Editor



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PREDATORY PEERS

It was a classic case of knife in the back. Lee Maynard, a 27-year-old staff executive at a growing importing firm and a sales rep, Teresa, were brainstorming a marketing idea—complete with rough graphs and a list of resources to present to the boss. Bruce, another sales rep, overheard them and drifted over. “He just listened,” says Maynard. “The staff frequently gets together to compare notes, so we weren’t put off.”

Then came the big surprise at the weekly sales meeting with the company brass. “Bruce handed out our graphs and lists—somehow he’d reproduced them—and outlined our idea,” Maynard remembers. “We were sure that eventually he’d attribute the concept to Teresa and me. But he didn’t! Then we realized that any attempt to claim due credit would be viewed dimly by the boss and that we had lost out.”

Maynard says he’s learned from this experience. “I wouldn’t say I’ve

become a hardened cynic about my peers, but I’m sure as hell sharper about my work relationships,” he says. “I’ve made a conscious effort to do better in two respects: I watch for signs of possible predation and am developing strategies to cope with it. Also, I camouflage any feelings of doubt or weakness because I believe they can be sensed by those who would use them to their advantage, as a shark senses a wounded fish. Although I haven’t entirely lost my trust in others, I take care to be discreet. I don’t leave paperwork on my desk when I leave my office and I’m sensitive about when and with whom I discuss business. You can bet I’m not going to let myself be ripped off by a co-worker again!”

The predatory peer behaves with varying degrees of subtlety and intent. Some, like sharks, strike because the opportunity is there. Others carefully lay snares—misrepresenting and undermining ideas, purposely misplac-

ing memos, establishing collusive liaisons—and then spring into the breach when the dirty work is done. Here are a few characteristics to watch out for:

- A pervasive negative attitude. “Why knock yourself out? Nobody pays attention to this department anyway,” a peer might tell you. When he or she has convinced you to slack off, you may find that someone “up there” has been made aware of it.

- Envy. You overhear a peer saying, “With that education and background, who could lose?” This leads higher-ups to believe that you may actually be underachieving or biding your time until you have the experience to move on to another company.

- Overaggressiveness. “Look, I say we just forget those turkeys—the two of us can handle this job by ourselves,” a colleague might tell you. That same person may be setting you up to steal the credit for your success or avoid the blame for any failure.

YOUR CAREER

Fighting fire with fire can burn you.

● Constant complaining. You may tend to tune out the whiner who complains about everything and everybody. Even listening to his or her gripes may imply that you agree and, more importantly, what does the whiner say about you? Does someone with more power than you also listen to this whiner?

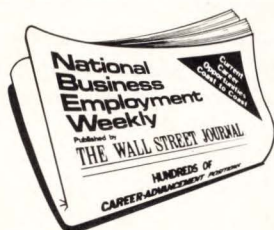
● Flattery. "Your advice is invaluable to me—I can't tell you how much I appreciate it," a flatterer might say. Is that colleague robbing your ideas? Watch out. He or she might lean on you so long and hard that you fall.

● Patronizing. A peer might praise you a bit too heartily when you know your performance wasn't up to par. This ingratiating attitude could be designed to put you on the defensive, which definitely puts this peer one-up on you.

These are only a few of the ruses predatory peers use to undermine you. Learning to recognize them and cope with the political situations they create—without becoming paranoid about *all* of your colleagues—can be tricky. The strategies you use depend on two variables. First, ascertain why you have become this predator's prey. Did you put yourself in a tenuous situation through lack of knowledge, poor performance, low self-confidence, inattention, or naivete? And, second, how long has it been going on?

Gertrude Kleinman, president of the Center for Behavioral Therapy Associates in New Brunswick, NJ, specializes in business-dispute resolution. She says that predatory behavior is common in corporations, but if you decide to deal with it in a way that stands to benefit you, the team—and maybe even the finagler—you can set things right.

"First," she says, "you have to identify and squarely face the problem. Second, identify the predator. At that point, you mustn't interpret or excuse your peer's behavior. If you do that, he or she will have two people on his or her side and you'll have no one. Third," Kleinman continues, "decide whether you're going to stay and fight or leave. If for some reason there's little chance of overcoming the problem,



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YOUR CAREER

**"When you behave as if you
have power, others believe you
have it."**

Kleinman, CBT

you may decide to leave the company." If you leave, Kleinman advises that you find a super job and "let the powers that be at your former employer know why you're leaving."

However, Kleinman says, the preferable alternative to leaving is to confront your predator and air your grievance. "It's critical to do this; facing the issue head-on may defuse it," Kleinman says. "And when you allow such issues to stay underground, you relinquish control." This is also one of the reasons that Kleinman suggests it's not the greatest idea to take your suspicions to your boss before confronting your adversary. If you do, you're not only putting your boss on the spot, but you're also saying that you don't know how to handle yourself or the situation."

Kleinman believes a confrontation can often turn around a bad relationship between two managers. Confronting the problem also highlights your integrity and demonstrates to your predator that you're too strong to be a scapegoat or victim. "If the predator knows you're aware of what's happening, that you're someone to reckon with, and that you can handle yourself in a fight, then you've put yourself in a strong position," she adds. "When you behave as if you have power, others believe you have it."

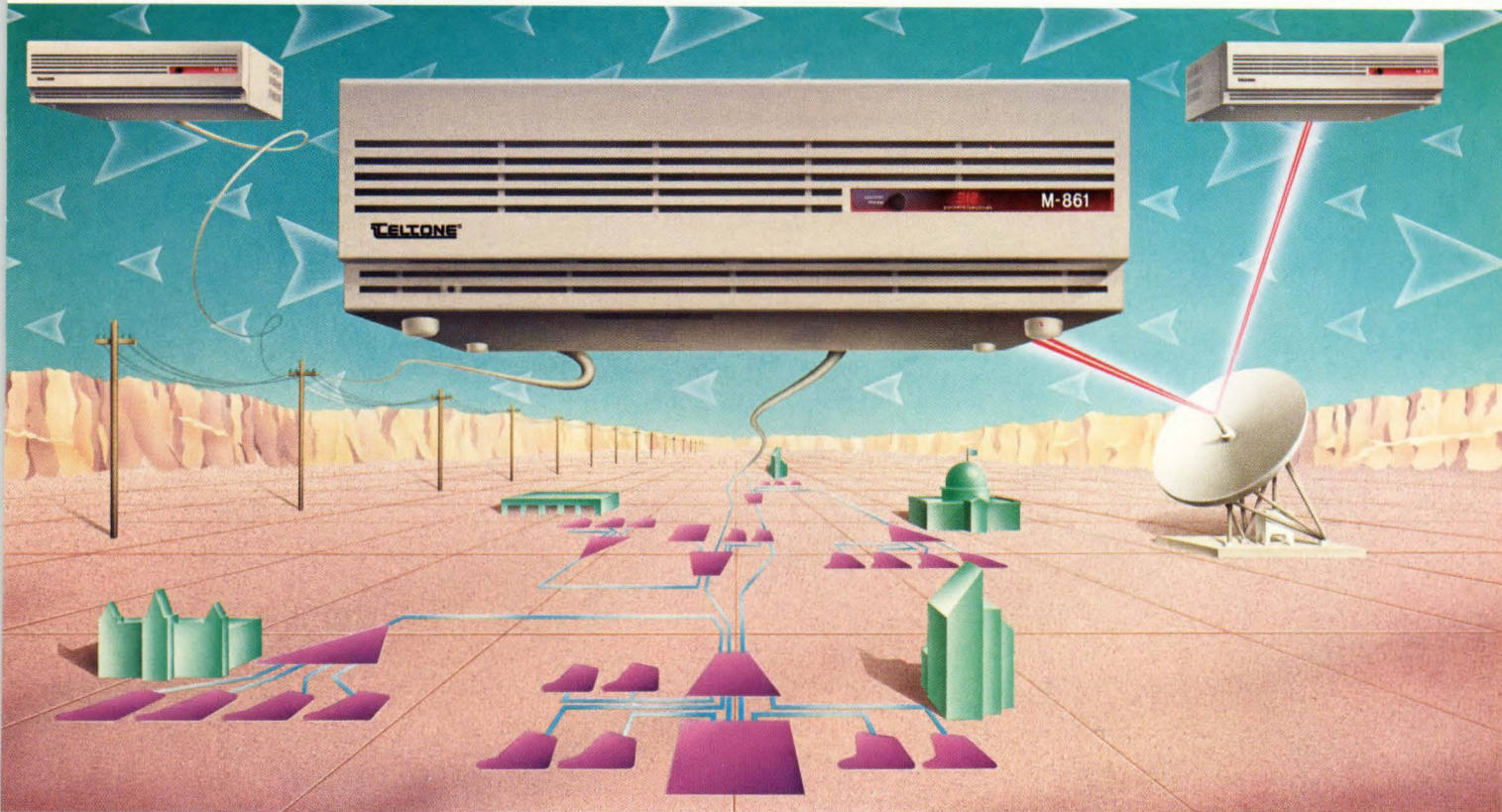
Confide in your boss only after developing a plan of action, says Kleinman. Armed with a plan, you have the opportunity to build your power image. What you tell your boss will not appear to be a complaint—a sign of weakness—but a fait accompli. You're indicating your strength by showing that you're handling the problem and, at the same time, covering that proverbial portion of your anatomy.

What if your plan of action fails? "That possibility is another reason that it's important to go one-on-one with your predator before you tell your boss," declares Kleinman. You must be certain of the predator's guilt and your own credibility. Fighting fire with fire can burn you.

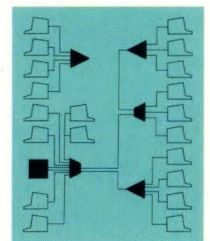
Confiding in an associate is another matter. Kleinman believes it's not a good idea. If you feel you *must* confide in an associate, says Kleinman, don't represent yourself as the predator's friend. She warns that this puts you at a disadvantage: You'll lose credibility by implying disloyalty.

In the long run, rationally and realistically confronting the situation and the perpetrator pays off for all concerned. Use your power in a way that will get you ahead, establish your integrity, and enhance teamwork. By coming across as a firm, sharp, trustworthy person who looks to find those qualities in others, you'll present yourself as manager who can handle sensitive situations effectively. That's a powerful asset to your career. □

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