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FEBRUARY 1984

THE MANAGEMENT MAGAZINE OF COMPUTING

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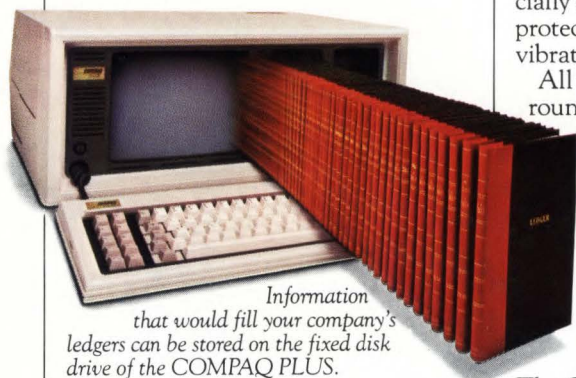
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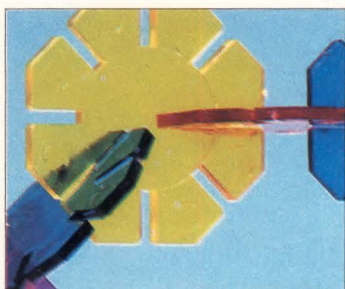
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Copies Printed: 171,979

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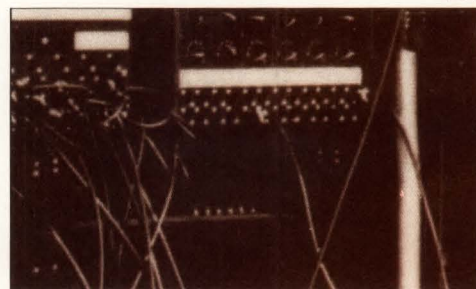
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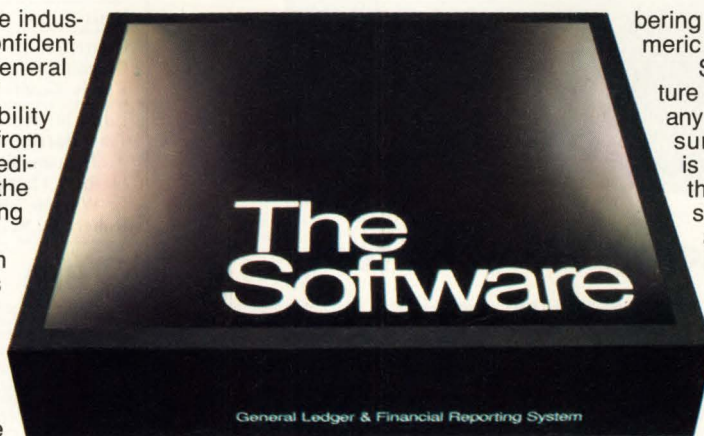
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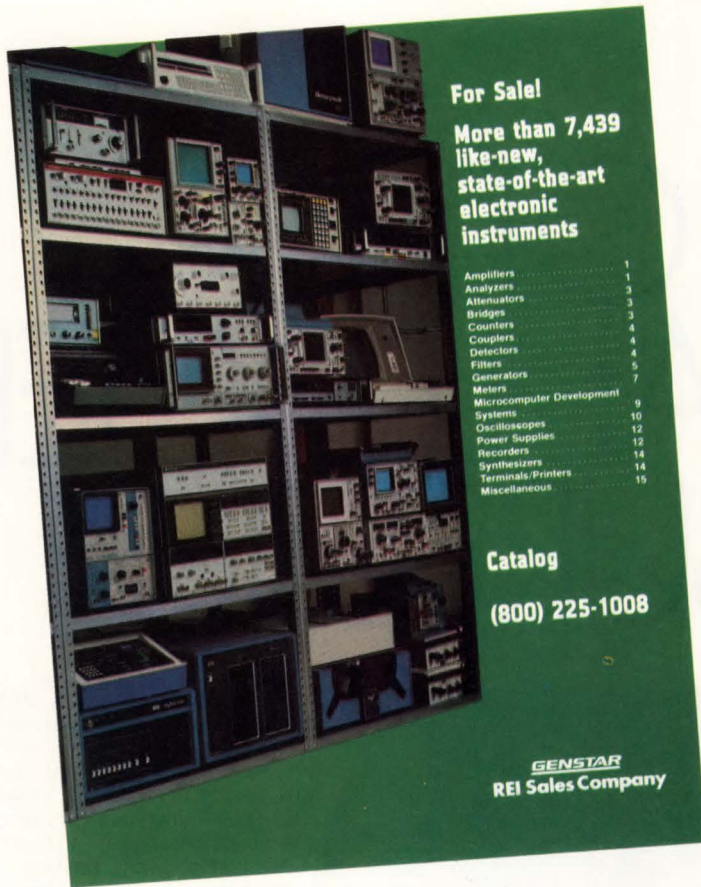
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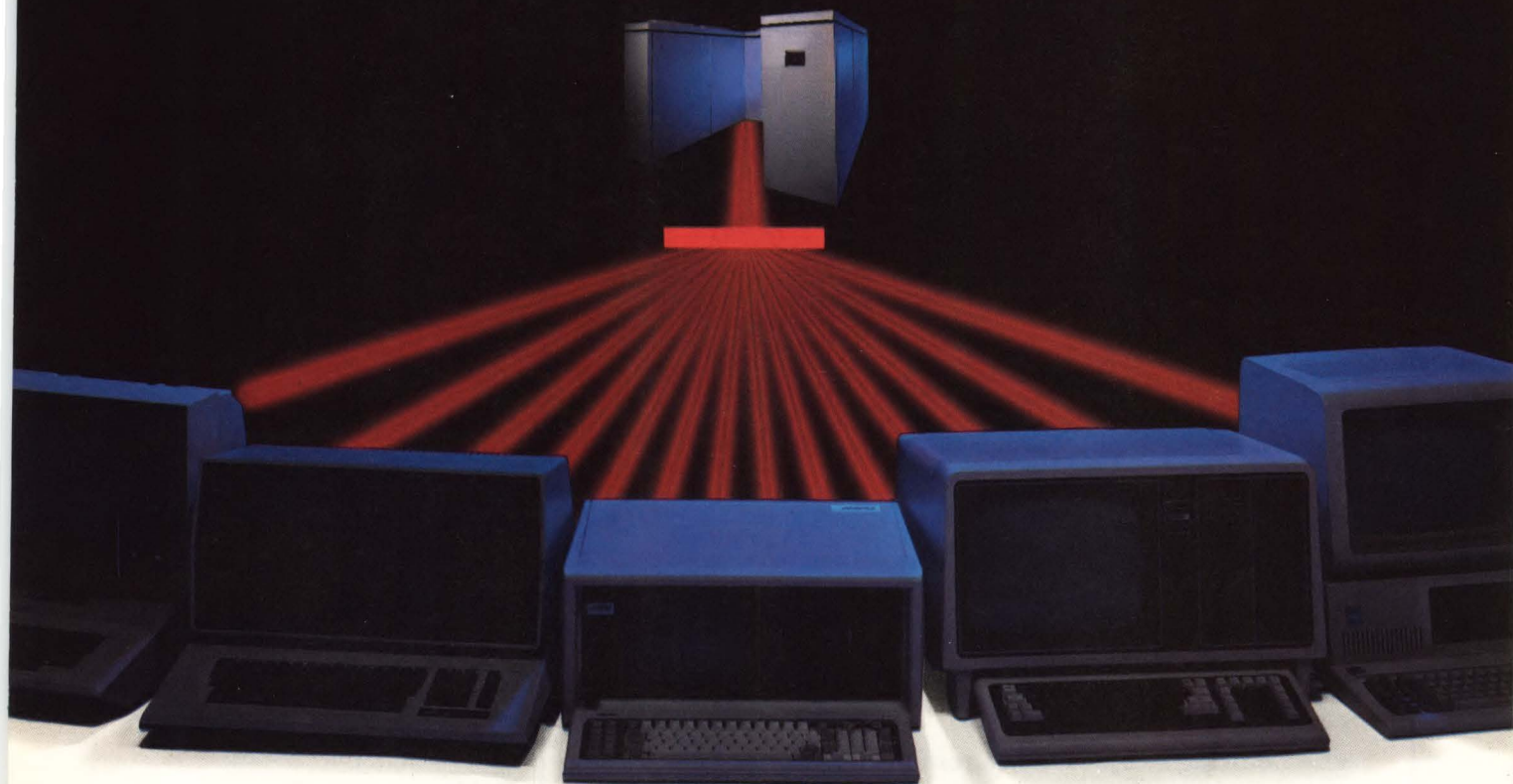
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COMPUTER DECISIONS (USPS 771-040 ISSN 0010-4558) is published 15 times a year for \$35 per year by Hayden Publishing Co., Inc., 10 Mulholland Dr., Hasbrouck Hts., NJ 07604. Second-class postage paid at Hackensack, NJ 07602, and additional mailing offices. POSTMASTER: Send address changes to COMPUTER DECISIONS, P.O. Box 1417, Riverton, NJ 08077. James S. Mulholland Jr., President and Treasurer, and Philomena DiMeo, Secretary. Printed at Brown Printing Co., Inc. All rights reserved. New subscriptions: COMPUTER DECISIONS is issued free of charge to qualified executives with active professional and functional responsibility in organizations that use computers and computer-based services and among computer manufacturers. Please fill out completely the Subscriber Qualification Form in the magazine. The publisher reserves the right to reject nonqualified requests. Subscription Rates: Qualified subscribers in the U.S. and Canada Free; Nonqualified in the U.S., Canada, Mexico, and Central America \$35. Single copies \$3.00. All other countries \$45. Single copies \$4.00. Limited quota of subscriptions available for persons outside the field served. Change of address: Fill out completely the Subscriber Qualification Form in the magazine, being sure to attach old mailing label in the space provided. Send correspondence with regard to editorial matters to address listed above. Unsolicited manuscripts will not be returned or acknowledged unless submitted with self-addressed envelope bearing sufficient postage for return. Address all other correspondence to COMPUTER DECISIONS, P.O. Box 1417, Riverton NJ 08077. Copyright © 1984 Hayden Publishing Co., Inc. All rights reserved.

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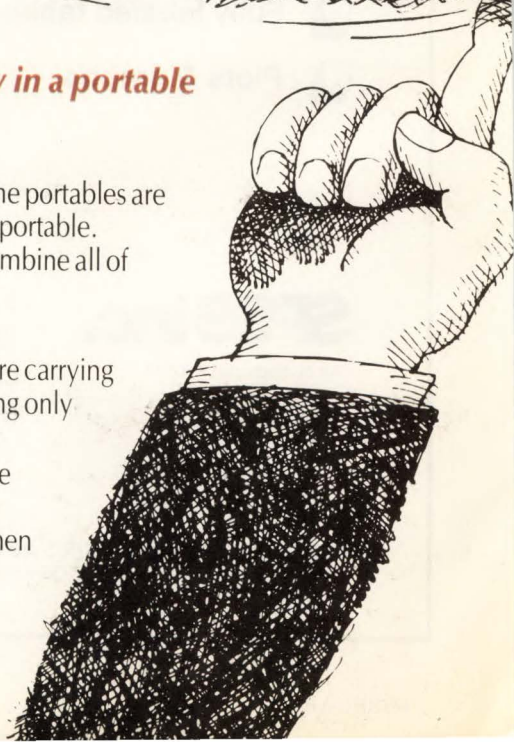
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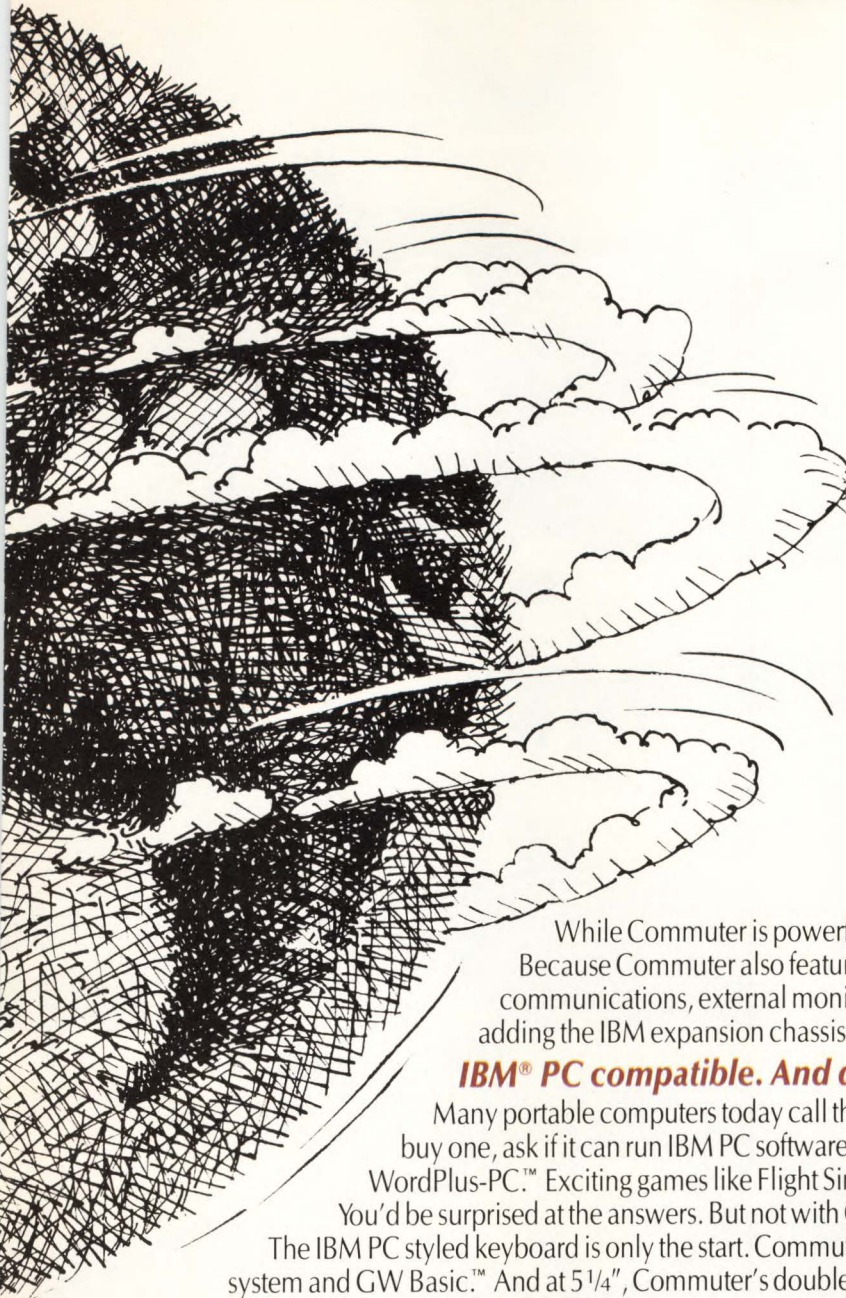
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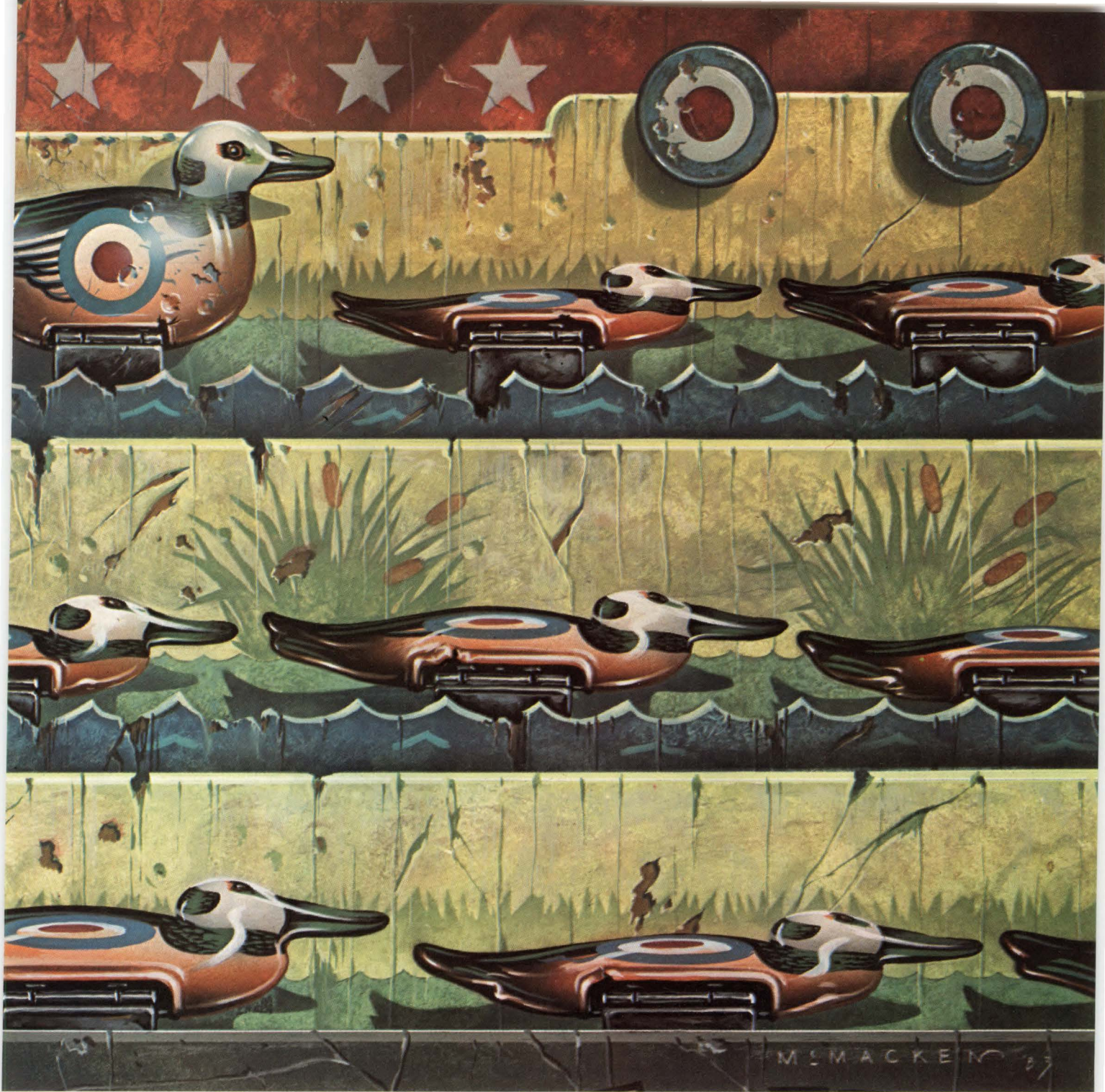
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INSIGHT

Too much technology

Can the computer industry be generating too much technology? That's the impression an editor might gain as he or she charges from one press conference to another and jets between computer shows. As Susan Foster, our microsystems editor, notes in her "Personal computing" column, in the many years she's been covering the industry, she's never before seen such a flood of new technology.

The big question raised is: Can users absorb all the new developments and breakthroughs? Obviously, many can't or won't for a variety of reasons.

While some corporations will make strong efforts to keep their information-processing systems as advanced as possible, others deliberately hang back. As one MIS director told us recently, "We prefer to remain at the trailing edge of technology."

That manager's motivation is understandable. He is responsible for a giant financial-service operation's data processing, and doesn't care to subject it to the glitches associated with spanking-new systems. His employer's business would suffer if any major online system faltered—or worse, crashed. This information-handling executive shrewdly lets others pioneer with newly introduced systems until he is sure the bugs are gone.

On the other hand, organizations that have lost a competitive advantage must be pioneers. To catch up



with, if not surpass, aggressive competitors who are gaining share of market, many of these organizations look to state-of-the-art computer technology to give them renewed vigor and clout. (The obstacles faced by such anxious followers were detailed in "Playing technological catch-up" last month.)

How do these organizations absorb new technology with as few side-effects as possible? In most cases, organizations motivated to take on new technology make a commitment to training. An effective training program can smooth a lot of bumps on the path to smoothly running yet advanced systems—and happy, productive employees.

Training can take many forms. For large organizations with many employees concentrated in a headquarters building or campus, the answer

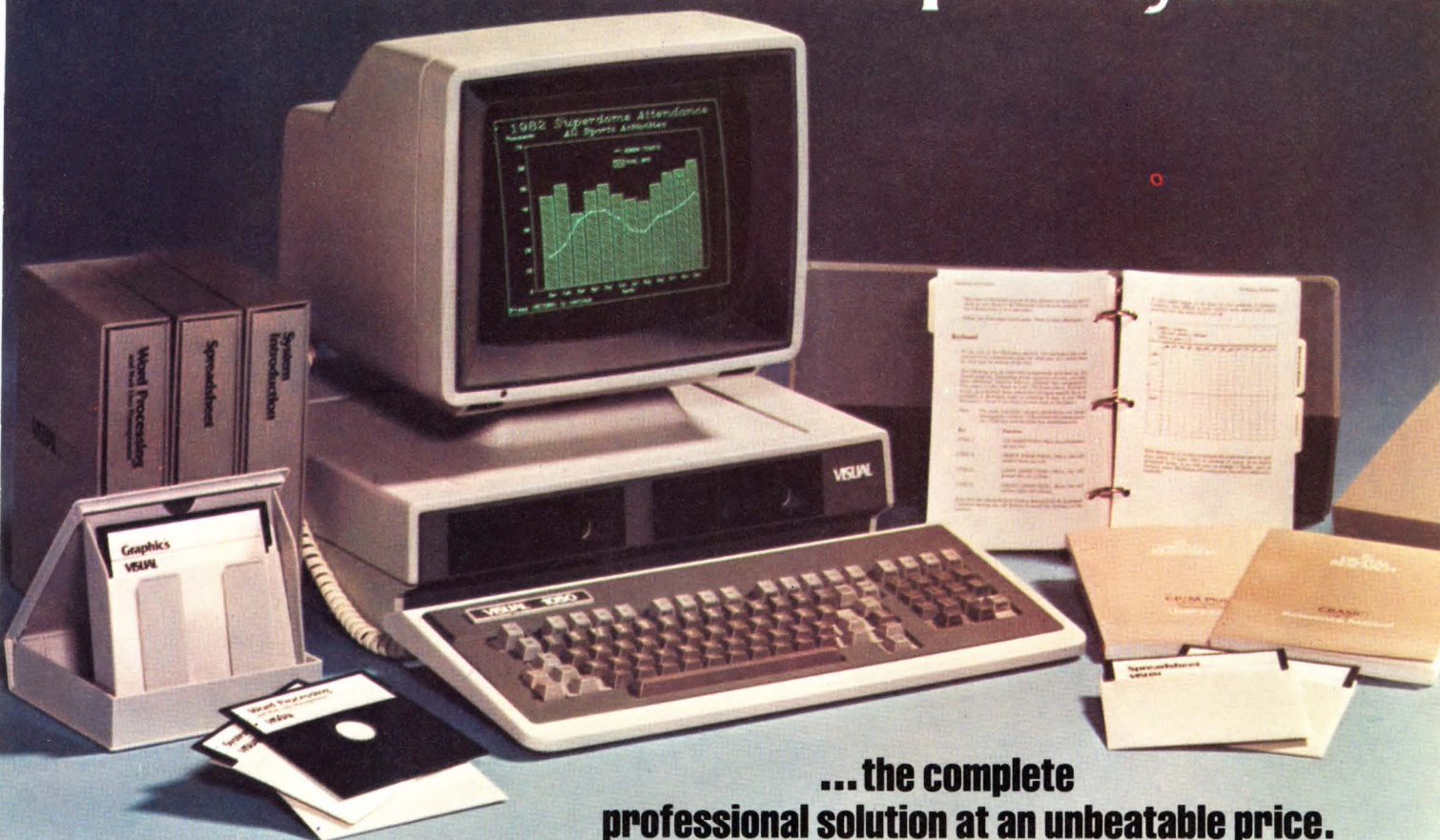
might be an information center. Such centers are becoming increasingly common, especially now that implementation of personal computing is often one of their mandates. Hardware vendors, too, are prepared to provide training. At a recent press conference sponsored by Digital Equipment Corp., a spokesman indicated that DEC now has as many customer-support personnel in the field as it does sales reps. Internal user organizations can also provide much-needed informal training. And there is a host of specialized organizations, mostly small and new,

devoted to providing all sorts of training, from live instructors to video presentations.

There are practically as many choices in training as there are in technology—and no magic formula to help you make them. Indeed, success often is found in the right combination of several training options. Only one fact is certain: An effective training effort will help you keep operations running smoothly and productively. To help you make the right training choices, *Computer Decisions* is inaugurating a bimonthly "Training" column in this issue. It will be written by staff writer David R. Roman, who has written about training in the past. We hope you'll find it useful. And, as always, we hope you'll let us know.

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Serial Port (RS232)	STANDARD	\$119	\$195	2 STANDARD	2 STANDARD
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Communications Software	STANDARD	\$100-\$200	\$100-\$200	\$100	STANDARD
COMPLETE SOLUTION PRICE	\$2,695	\$3,928-\$4,628	\$3,465-\$4,165	\$5,496	\$4,940-\$5,540
Dual Drive Capacity	800 KB	640 KB	280 KB	2.5 MB	800 KB
Graphics Resolution	640 x 300	640 x 200	280 x 192	640 x 240	800 x 240
Keys on Keyboard	93	83	63	82	105
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NEWS & COMMENT

No detente for MIS and users

A majority of MIS/dp executives are still at odds with their users, despite lip service to the contrary, according to a recent survey by a New York executive-search firm.

In a poll of 125 senior MIS/dp executives by John J. Davis & Associates, the majority said they harbor negative feelings about users and still do a major share of systems development without soliciting user advice.

Although 72 percent of the executives agreed that users are generally eager to work with MIS/dp to develop information systems, 66 percent said MIS/dp staff in their corporations do the major share of systems development and check it with users only after it's completed.

Part of the problem may be a lack of information, the survey results suggest. Two-thirds of the respondents said many users have a serious lack of appreciation for what information systems can do, and an equal number believed users will need more training and education to overcome that shortcoming.

The survey, which was conducted



"A significant communications gap still separates MIS/dp executives and users." Davis, John J. Davis & Assoc.

last fall, addressed issues of planning, security, and technology, as well as management trends in MIS/dp. Of the 125 respondents, 108 came from businesses with more than \$1 billion in gross annual sales.

John J. Davis, president of the headhunting firm, said he was surprised to find that a significant communications gap still separates MIS/dp executives and users. "MIS apparently is not making enough

overtures to alleviate its communication problem with users," he said. "As a result, user education is not increasing, and the users' supposed larger role in the systems-development process seems to have been relegated to a back burner."

Many of the responses indicate that MIS/dp executives have "an isolationist attitude," says Davis. "The professional disdain for the less-than-sophisticated user also persists," he said. Half the respondents said users are unimaginative when it comes to meeting their information needs. Only 13 percent of the respondents thought users were satisfied with and complimentary of MIS/dp's efforts. Fourteen percent said users constantly complain, and 22 percent believed users don't appreciate the complexities of making system changes or meeting unreasonable deadlines. However, 51 percent conceded that although users always keep the pressure on, they do appreciate the magnitude of MIS/dp's work.

Despite the evidence of continued tension between MIS/dp and users, 79 percent of the respondents said user-oriented information systems are the best way to raise productivity. More than two-thirds (73 percent) advocated installing personal computers, 71 percent endorsed database technologies, and 64 percent supported "natural" language programming.

Database management systems emerged as a key concern among the executives. Sixty-nine percent said DBMSs help users do their jobs more effectively by providing access to more information. But they gave the available database systems mixed reviews. More than half (53 percent) said DBMSs have complicated their design efforts, but 54 percent said DBMSs, at the same time, simplify programming.

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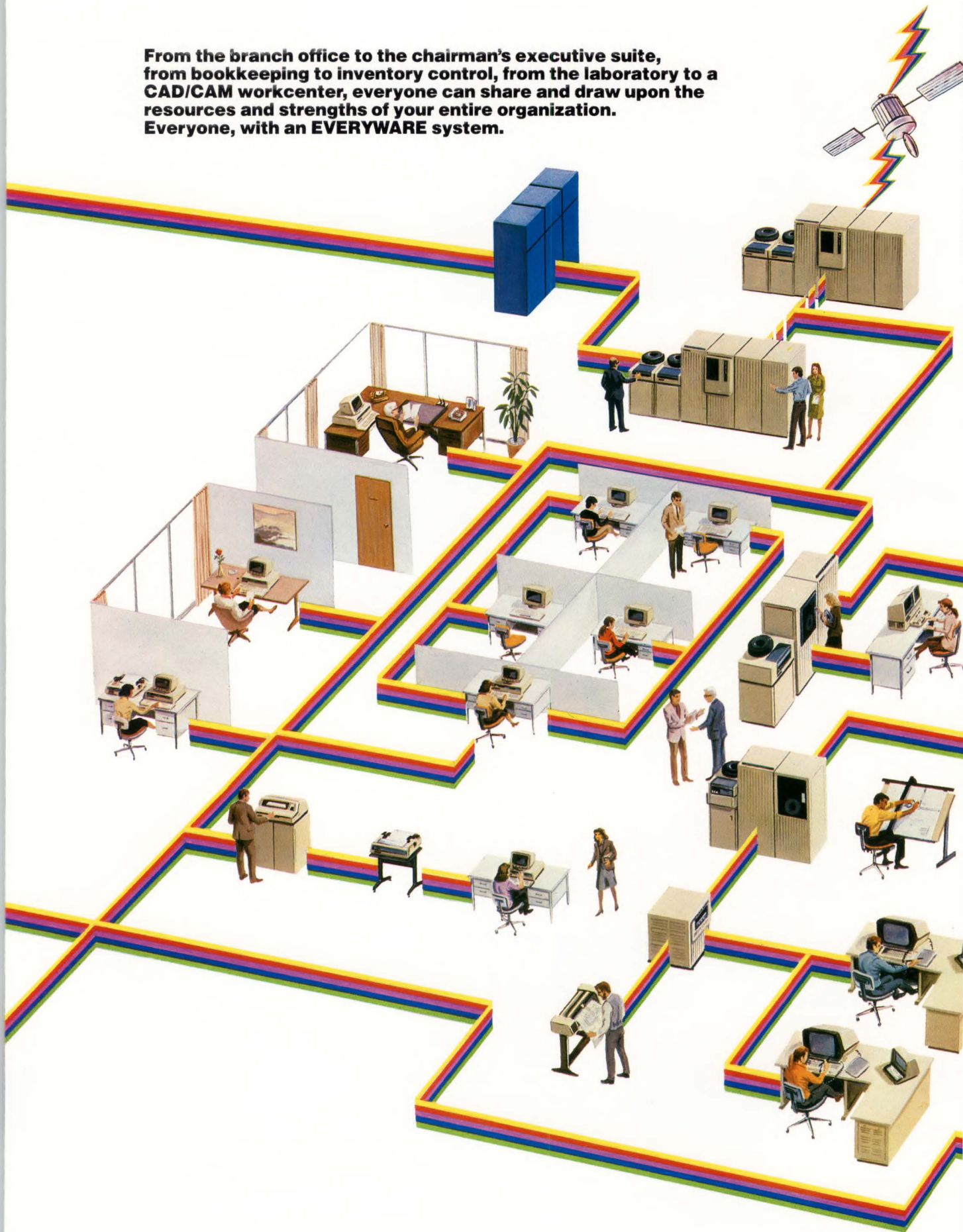
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EVERYWARE software: unparalleled flexibility.

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NEWS & COMMENT

The results also suggest the executives are waiting for IBM to improve its Information Management System (IMS), says Davis. While they wait, 65 percent of the respondents said that independent software houses producing superior database-management packages—IDMS, Total, and Adabas were mentioned—will continue to increase in importance.

Davis also surveyed the management goals of the respondents. More than half (57 percent) indicated they want to remain in the information-handling field as members of top management. But 29 percent said they hoped to leave MIS/dp to become involved in line operations.

A major part of the survey was devoted to analyzing trends toward centralized, distributed, or decentralized management in 13 key aspects of MIS/dp. A majority of MIS/dp executives indicated that their organizations had centralized control over planning, data administration, telecommunications, voice communications, information-center operations, data security, training, and performance measurement. Moreover, the respondents said they plan to maintain centralized control over these functions.

However, the survey results suggest that MIS/dp executives are living with central standards only because they must. Eighty-four percent of the respondents said their organizations had central standards. Only 20 percent said they want to keep these standards in the future. Yet, 82 percent said that despite their preferences, MIS/dp standards will remain centralized. Davis interpreted these results as meaning that although the executives want to decentralize MIS/dp standards, "they're saying that they don't know how to deal with the problem."

The results also suggest that information-systems planning is becoming a strategic concern in many corporations. Eighty-two percent of the MIS executives said their corporations have a formal information-

systems plan. Two-thirds (67 percent) said this plan is formally linked to the business plan, and 44 percent said their operation assigns MIS professionals to full-time planning. Only 5 percent of the respondents use outside planning consultants.

On the issue of security, 35 percent of the executives said they did not have passwords at the data level. Most of them (90 percent) reported passwords to access functions, and 92 percent have terminal-access security systems.

When can MIS/dp play autocrat?

Must MIS/dp departments always follow the sacred injunction of "service to the user?" When a corporation is undergoing a strategic change, that rule can be dropped, says David G. Robinson, vice president of Index Systems Inc. (Cambridge, MA).

Users feel threatened by a strategic change and will resist any technology brought in as part of the new direction, says Robinson. Obviously, this puts the information-handling personnel assigned to implement new

"strategic systems" in a tough position. Robinson told a recent session sponsored by The Conference Board that when placed in this position, MIS/dp must serve the top brass' interests first, even if it is at the expense of serving users.

However, when "commodity-type" systems are being implemented, the MIS/dp department should conform to the needs of users, Robinson told the conference.

Robinson was one of two "contrarians" who spoke at the session in New York. Paul A. Strassmann, a vice president for systems application at Xerox, questioned the wisdom of many investments in information technology.

"Technology is not an unmixed blessing," said Strassmann. Sophisticated systems that are inserted into poorly organized companies *reduce* rather than raise productivity, he asserted.

Strassmann also ridiculed some of the popular methods of measuring productivity. In particular, he took aim at time-and-motion studies, which he claimed appeal to executives who dote on "meaningless simplicity." He conceded that it is difficult to measure productivity, but insisted that an effort must be made. Otherwise, a corporation will have no way of telling whether an investment has paid off.

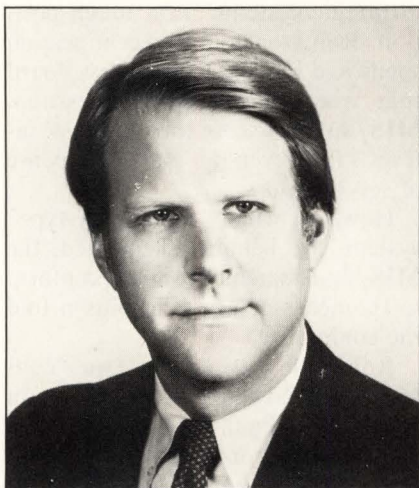
Another speaker, Gil Gordon, a Monmouth Junction, NJ-based consultant, predicted that recent setbacks in corporate experiments with "telecommuting" are only temporary. Changes in the structure of traditional families are forcing businesses to consider work-at-home schemes, he asserted. For instance, 56 percent of women with children under six years of age are in the workforce, he told the conference.

Gordon conceded that there have been few successes among the 600 companies that have tried telecommuting. The reasons are that the switch to the alternative work method is usually poorly planned and implemented, he said. He recom-



The best technology won't solve the ills of a poorly organized company, says Paul Strassmann, a vice president of Xerox Corp.

NEWS & COMMENT



When users are likely to resist a strategic technological change, MIS/dp must get tough with them, says David G. Robinson, a vice president at Index Systems.

mends two to three months of planning, followed by about 10 months of evaluation.

A key to successful telecommuting is proper linkage with the home office. Telecommuters should visit the office two or three times a week simply to "maintain social interaction." Also, Gordon believes many companies don't choose telecommuters carefully. Corporations shouldn't accept volunteers. "Telecommuting is not an alternative to day care," he said.

Gordon also claimed that few executives understand the ways that employers can benefit from telecommuting. Employers who implement programs raise their total labor pool, cut office-space costs, gain greater control over recruiting costs, and can use telecommuting as an option to disruptive relocation.

Other speakers at the conference included Carl G. Wolf, president of Chase Econometrics/Interactive Data Corp., Waltham, MA. If the micro-to-mainframe connection Wolf's company is providing to customers is any indication, users aren't satisfied with mere terminal emulation.

Chase Econometrics/IDC, a major supplier of online financial and

economic databases, once provided customers with access to information via dumb terminals. An increasing number, however, are using personal computers to access databases. But rather than set up their micros to emulate terminals, many are using software that permits local communication of data drawn down from the big databases, says Wolf.

Survival of the best-equipped

Managers and professionals without personal computers simply won't be competitive," admonished Thomas Willmott at a recent conference held in Washington, D.C. The conference, "Managing microcomputers in large organizations," was sponsored by the National Research Council.

Willmott, director of user programs for International Data Corp. (IDC) in Framingham, MA, also predicted that by next year personal computers will have the power to process up to 4 million instructions per second—yet will cost only \$5,000 each. These mighty machines will be



John Bennett, corporate director of data processing for United Technologies, believes that, though it can't be stopped, the use of personal computers can be managed.

enhanced with artificial intelligence, he added.

Consultant John Diebold, head of the Diebold Group, New York, stressed the need for tying personal computers into an "integrated information system that links all operations within the organization." He noted that such a formidable task would require senior-level commitment.

The importance of senior management's commitment to personal computing was emphasized throughout the conference, but Al Omand, executive in charge of General Motors Information Systems and Communications Activity, said that CEOs of large organizations shouldn't concern themselves with all the pressing issues raised by personal computing. Machines are already able to deal with many of the concerns, he reasons.

Product proliferation and its associated problems of system compatibility, terminal support, and duplication of effort, he argued, should be handled by information-services staff members. "Let them help users sort out the alternatives and evaluate the applications," he advised.

Omand also asserted that "acquisition practices—policies concerning cost savings, vendor interface, obsolescence, and license restrictions—should be handled by the purchasing department." Acquiring personal computers is no more important than handling any other expenditure, he insisted. "Let your auditors do their job."

However, Omand claimed that data management and employee education are corporate-wide responsibilities that need direction from the head of the company. "The executive at the highest level must set the standards for data management," he said. "Interdepartmental coordination of data access and security affects the entire organization."

Similarly, education and training are required to shift an entire white-collar work force to a new skill level. "Users will have to become more



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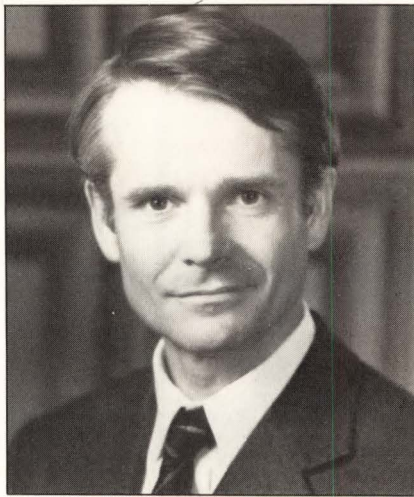
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NEWS & COMMENT

aware of the power of the personal computer and of their responsibilities for both maintaining data security and formatting data summaries to be communicated without interpretation. Information-service professionals will have to gain a better understanding of the user's business, and develop consulting skills. Auditors will have to learn more about computer technology, and so on. Such an extensive educational process must be initiated by top management."

John Bennett—corporate director of data processing for United Technologies Corp., a Hartford, CT, Fortune 20 industrial company—thought the growth in personal computing is "uncontrollable but manageable." That is, the growing use of personal computers can't be stopped, but it can be managed. Like Omand, Bennett considered data management and education to be issues that require top-level attention.

John Alexander Jr.—general di-



"Corporations are not sure where they're going with personal computers, but they have some brilliant ideas on how to get there."

Thompson, Index Systems

rector of corporate administration for Reynolds Metals, a Richmond, VA, metals producer with 30,000 employees and 1982 sales of \$3.5 billion—

remarked that growth in personal computing is inevitable because "the cost of automated components is declining by 20 percent a year, while the cost for salaries is increasing by 10 percent a year."

His advice was to promote the spread of personal computers and view the potential user base as an internal market. Reynolds' strategic goal, he indicated, is to double productivity by supplying all salaried personnel with personal computers by 1990.

A similar goal exists at Cigna. This New York-based giant financial-service and insurance firm has revenues of \$13 billion and assets of \$31 billion. It employs 41,000 people in 147 countries. Allan Loren, senior vice president, described a way to introduce automation into a large corporation. At Cigna, this process started with an internal timesharing service, which later was hooked to outside databases. From there, the

Tongue in check

Simple statements are so annoyingly simple. And therein lies the motivation for the abundant use of hyperbole and the minimizing word *basically*.

In each case, the approach is different but the effect is the same. A hyperbolist takes the direct approach: An adjective or analogy makes the ordinary more authoritative, more noteworthy, or truly unbelievable. The minimizer accomplishes much the same goal, but in a more subtle way. By tacking *basically* onto a word or phrase, the minimizer makes it seem less significant, and in doing so, suggests that the concept the word or phrase identifies is part of something too wondrous or complex to explain. The minimizer says, "I can only say this much now, but when I think you're ready, I'll tell you the rest."

Computer professionals are in love with the word. Perhaps the appearance of Basic, the programming language, helped advance the illicit cause of *basic* and *basically* among them. Consider, for example, the MIS/dp manager who was asked to describe the most important benefit a particular software package gave his organization. "Basically," he replied, "the major benefit derived from [the package] is that we could not have done the job without it." That's a bit of hyperbole (One way or another, the job probably would have been completed.), but the statement is also strangely unsatis-

fying. How many other benefits did the company enjoy?

The same is true of another MIS/dp manager who was describing his organization's terminals. "Basically, we've got IBM teller terminals," he reported. Some listeners might momentarily relive the frustration of Richard Nixon's vague statements about his role in the Watergate scandal. That sentence also is an example of *basically* being used to lengthen a simple statement in the hope it will take on greater proportions.

The misuse of *basic*, and its derivatives, to add an element of authority to words and statements is nothing new. It was invented during the 19th century for use in special scientific contexts. It soon became a misconceived stand-in for *fundamental*. Now it has become widely misused as a substitute for not only *fundamental*, but also *essential*, and even *common* (as in, "They had *basic* likes and dislikes. . .").

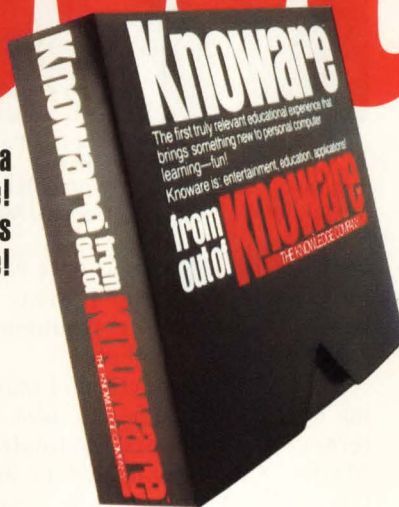
In many instances, *basic* is flab that makes a sentence strain a little harder to deliver its meaning. That's reason enough to avoid it. But the word's ability to obfuscate and confuse is of greater concern here. Nontechnical associates may already have trouble understanding you. By overusing *basic* and *basically* you'll submerge them in doubt. Worse, you may undermine your own credibility.

—John Rymer

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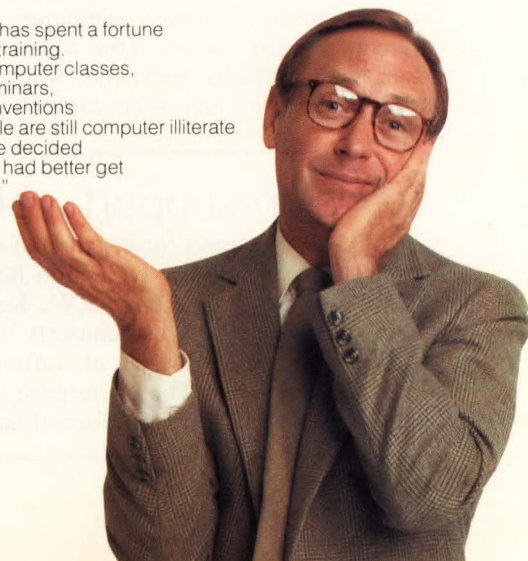
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NEWS & COMMENT

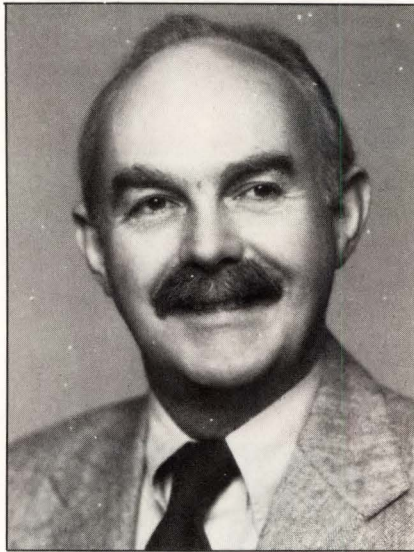
company established information centers and, finally, a computer store.

"By facilitating use of automation along the way, we were able to give managers everything they needed for personal computing. A computer store offering a variety of hardware—all compatible—and a software library took care of the managers' needs and let us track equipment use," Loren said.

In the public sector, Ray Kline, deputy administrator of U.S. General Services Administration, said: "Although we anticipated the personal-computer era long before it arrived, we were nevertheless unprepared for its suddenness. The trickle became a flood in a matter of a few years."

Last year, Kline began to put together a government-wide policy for end-user computing. He made plans to manage the predicted 210,000 personal computers to be installed at the end of last year. His recommendations are now being implemented among federal agencies. They include: procedures to develop a strategic plan and set standards; a review process for evaluation, justification, and approval; and user-assistance and -education programs.

Kline, incidentally, had weighed the idea of instituting a moratorium on purchasing personal computers. He rejected that approach. Thomas Conrad, deputy assistant secretary for the Air Force, did mandate a moratorium. "We had to get a grip on things," he said. "I found, for instance, that on the North-South Korean border, personal computers were personally owned. This meant that when military personnel were transferred, they took their comput-



"CEOs of large organizations cannot concern themselves with all the pressing issues raised by personal computers." Omand, General Motors

ers with them. My first move was to impose a 12-month moratorium. The next was to develop a requirements contract for the Air Force."

That particular method of managing micros ran counter to most conference participants' inclinations. Martin Zimmerman, deputy assistant, U.S. Army, said he actively pushed the introduction of personal computers through a combination of top-down planning and bottom-up development. Roger Sisson, president of Sisson, Michaelis Associates, a Swarthmore, PA, consultancy, said: "I'd be surprised if anyone will be able to get away with imposing a freeze two years from now."

Sisson went on to suggest that too much control would solve one problem only to create another. "Innovation is necessary at all levels of an

organization if an enterprise is to succeed in its mission. A high degree of control may keep a lid on misuse of data, but it may also throttle what might be called 'distributed creativity.'"

Sisson defined "distributed creativity" as a kind of synergy caused by individuals coming up with good ideas and making better decisions due to accessing corporate data unavailable without crts. Still, when challenged, he conceded that preventing anarchy is probably as important as encouraging creativity.

A major form of anarchy discussed by participants is random manipulation of information contained in the corporate database. Without strict database controls, users can unknowingly base their decisions on inaccurate or highly misleading information.

Alexander of Reynolds Metals agreed that "everyone should be able to use the data they need," but warned that "if all managers enter their own data, no one can get the information they need."

"Personal computing tends to become divisional computing," observed General Motors' Omand. "You should see a red flag go up when you notice different people using different formats for the same information. And, when they're actually using different figures for the same variables, you really haven't paid enough attention to ownership or control of data."

One way to prevent this confusion is to put someone in charge of data entry. Zimmerman suggested that this responsibility reside at a fairly high level. In the Army, the responsibility for database integrity is assigned to a high-level officer. "It's important to define acceptable sources of data," said Zimmerman, "and to oversee their entry."

The opportunities for indiscriminate data entry will increase as communication with mainframes—already possible—becomes more widespread. Said Bennett of United

(News continued on page 26)

Decision-support software conference

Software tools for distributed decision-support systems" is the title of a conference to be held in Boston on February 27 and 28. Speakers will include Peter G.W. Keen, formerly of the Sloan School of Management at the Massachusetts Institute of Technology, and now a consultant; Warren G. Briggs, of Suffolk University; and Gary K. Gulden, of Index Systems Inc. The conference will be held at the Westin Hotel. The charge is \$495. For more information, call (617) 723-2349 or 4700.

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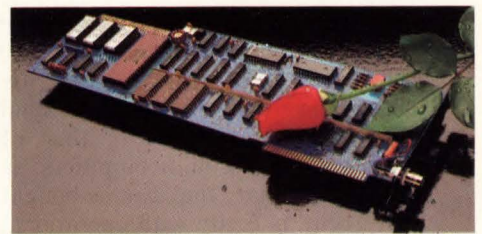
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NEWS & COMMENT

(Continued from page 22)

Technologies: "As downloading from the mainframe gets easier, more employees will have access to corporate information. That's fine. But uploading is a different story; it may be possible, but corporations can't allow it."

Given the tradeoff between the benefits and the problems of personal computing, one might expect that cost justification would play a major role in the decision to bring personal computers into the corporation. But it doesn't.

Norman Epstein, executive vice president and director of E.F. Hutton, bluntly stated that the cost justification for personal computers at his big brokerage house did not rest on the balance between the investment in computers and the expected return. Rather, he claimed, "we had a choice between automating our end-user departments or going out of business. We didn't have any choice. Our competition was using personal computers, so now we are too. All of our 6,000 account executives have them. In fact, we plan to sell personal computers to customers so they can tie in to our databases. We plan to have 5,000 customers online with us by the end of next year."

Even Conrad, the Air Force official who imposed a freeze—partly to ensure savings through bulk purchases—said that the cost of personal computers, compared to that of mainframes and minicomputers, is low enough that "they can be bought just about as easily with operational funds as with capital funds."

At any rate, the personal computer is no longer considered a novelty item. According to Willmott of IDC:

"Personal computing is spreading rapidly. We've seen what it can do locally, and are looking ahead at what it can do in communications networks."

Diebold thought that certain directions were clear in the development of personal computing. "Right now," he explained, "only one-fifth of installed personal computers are connected to larger systems, and four-fifths are not. In the not-too-distant future, these numbers will be reversed. Now, approximately 3 percent of education and training funds go to users of personal computers. This amount will also increase dramatically."

Much of the future remains hidden from view, however. Mitch Kapur, president of Lotus Development Corp., Cambridge, MA, warned that it is impossible to forecast beyond 12 months with any confidence. "Software development is not market-driven. Individual geniuses work away at new applications, without any knowledge of what makes a useful program." He doesn't think asking managers what they need is a useful solution, either: "Four years ago, if we'd asked, would they have told us 'We need a spreadsheet program?'"

Yet the acceptance of Visicalc and related programs went a long way toward bringing managers and micros together. Will there be similar breakthroughs in the future? Kapur declined to say.

"When it comes to the microcomputer revolution, we're not sure where we're going, but we have some brilliant ideas on how to get there." John Thompson, vice president of Index

Systems in Cambridge, MA, said in his assessment at the end of the forum that "wherever we're going, we're going with breakneck speed. Today, there's one personal computer for every 25 white-collar workers. In six years, there will be one personal computer for every two employees."

Integration plus

Windows, the micro-to-mainframe connection, and split screens in full color are included in CA-Executive, the latest offering from Computer Associates International. Best known as a supplier of IBM-mainframe software, the vendor has begun branching out into personal-computer software.

Because CA-Executive comes with on-site installation and training, it is sold in a minimum number of five units, at \$1,295 each. If a customer buys at least 51 units, the price per unit is reduced to \$695.

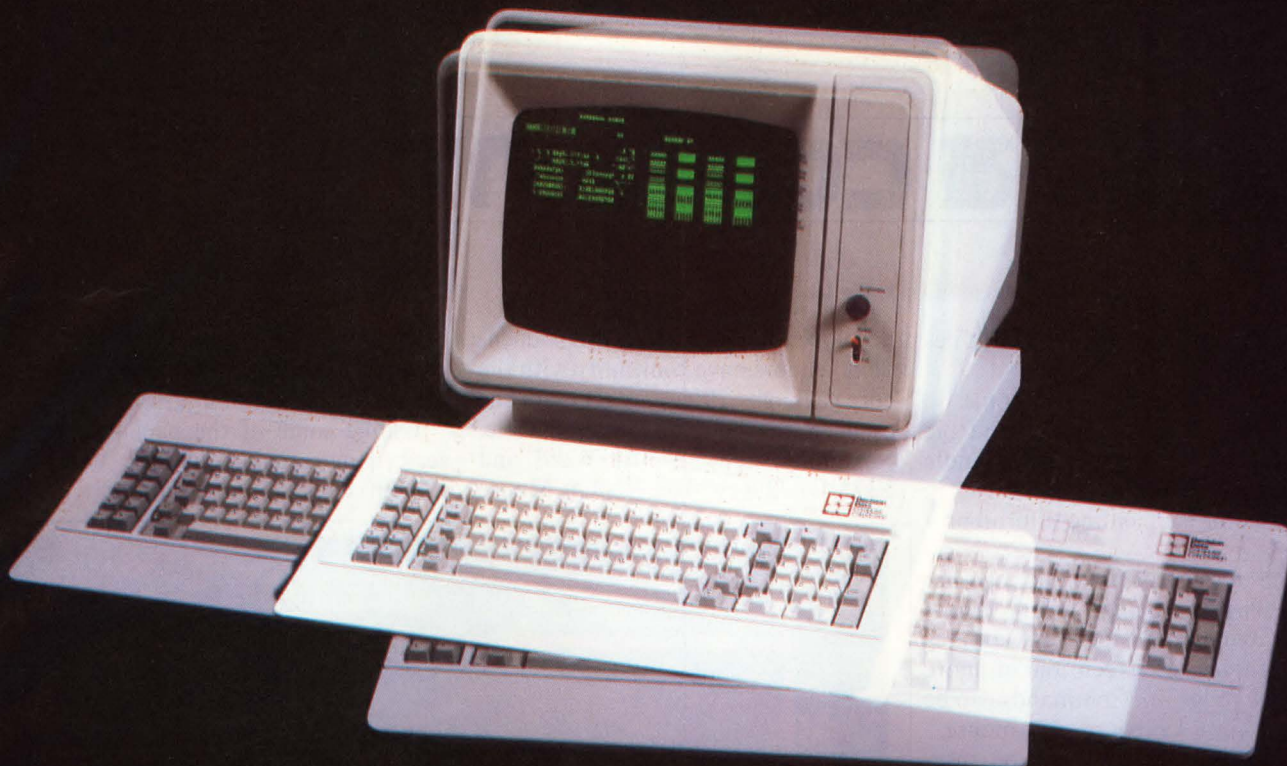
CA-Executive works on the IBM Personal Computer XT—the newer version with a hard disk—equipped with a color monitor. It also works on an IBM Personal Computer with two floppy-disk drives and a monochrome monitor, but you'll have to do some disk swapping to use the full range of functions. At least 256 Kbytes of main memory are required, but the programs actually work best with 512 Kbytes of memory.

CA-Executive comprises eight integrated programs:

- CA-Link ties an IBM PC to a mainframe or other IBM PC running the same package. It allows both downloading and uploading of data. It also allows an IBM PC to emulate an IBM 3270 terminal.
- CA-DBMS is a relational database management system that includes a report writer.
- CA-Writer is the Easywriter II word-processing package, including Easyspeller II and Easymailer.
- CA-Calc is an electronic spreadsheet.
- CA-Edit is a full-screen text editor

Computer-graphics directory

To help professionals stay abreast of developments in computer graphics, Oryx Press has just released the second edition of *The Computer Graphics Marketplace 1983-84*. This 102-page paperback is a practical reference tool providing complete listings of products and vendors, consultants and services, professional organizations, educational programs, conferences and conventions, and publications. The publication also provides information on the key computer-graphics experts. The directory is priced at \$32.50. Call (602) 254-6156 for more information.



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that lets users create and edit files and programs.

- CA-Form is a forms generator.
- CA-Graph generates bar and pie charts and line graphs. It can handle composite reports.
- CA-Tutor is an online tutorial program.

Each of these parts is tied together by a window manager that permits what Computer Associates claims is true concurrent execution of more than one program. Commands can be entered via a keyboard or a mouse.

CA-Executive can also be integrated with Computer Associates' relational DBMS for mainframes, CA-Universe. The package dovetails with the security provisions of the mainframe DBMS, letting executives shield sensitive data from unauthorized employees. For more information, call (516) 333-6700.

Integration flood continues

The flood of integrated-software packages for personal computers reported in recent issues continues unabated. Visicorp, the pioneer that started as distributor of Visicalc, has finally released its entry, VisiOn. The integrated batch of programs was announced almost a year ago, but only recently became available.

Like other integrated software, VisiOn lets users work on several tasks simultaneously, each contained in a "window" on the display screen. Manipulations are accomplished with a mouse attachment. Tasks are implemented through VisiOn Calc, VisiOn Word, and VisiOn Graph—each name corresponds to the component's function. VisiOn Query, a relational database manager, will be available soon.

The key to Visicorp's offering is The VisiOn Applications Manager, which lets the components work together. Visicorp claims the component also ensures that programs

developed under VisiOn by independent vendors have continuity with the core packages. Prices are \$495 for the applications manager, \$395 for Calc, \$250 for Graph, \$375 for Word, and \$375 for Query. The VisiOn Mouse

costs \$250. The total price of \$2,140 makes VisiOn the most expensive integrated package of all.

Unlike some of the packages described in recent issues, the VisiOn system does not offer instant up-

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dating of graphs to match spreadsheet changes. Users must enter commands to transfer updated data from a spreadsheet to the associated graphic presentation. Daniel Fylstra, Visicorp chairman, claims user sur-

veys indicated that instant updating is not an important feature.

While Visicorp was pouring millions of dollars into the development of VisiOn, two students created another integrated package on a

shoestring in their spare time. Howard Marks, 21, and Bobby Kotick, 20, both students at the University of Michigan in Ann Arbor, call their package Jane. It costs only \$295, including a mouse.

Jane, whose name was inspired by the children's reader *See Jane Run*, works on 8- and 16-bit systems. It can also work with as little as 64 Kbytes of memory. Most other packages require more memory. The initial version offers word processing, spreadsheet and file/list management programs. Each application is claimed to be interactive with the others, and users may work with each through up to four on-screen windows. The dimensions of the windows can be changed at the user's discretion.

Next for Jane will be a graphics program and communications packages compatible with MCI Electronic Mail and the U.S. Postal Service's E-Com. The first version of Jane can run on Apple Computer models; a tape-cartridge version runs on the Commodore 64. Next month, versions for the IBM Personal Computer, the PCjr, and the new Atari computers will be introduced. For more information, contact Arktronics at (313) 769-7253.

Propel integrated software, from Pro Computing, is unusual in three respects: It integrates the most widely used office tool—the telephone; it's only available for the DEC Professional 350 personal computer (from Digital Equipment Corp.); and it isn't being sold through retailers.

Like many integrated packages that have appeared since Lotus 1-2-3, Propel offers word-processing and spreadsheet capabilities. But its use of the phone is unique. Propel includes a phone directory with automatic dialing, a means for keying in notes while on the phone, and answering and message-taking facilities. It also offers electronic-mail communications.

Why release Propel for only the DEC Pro 350, which is not a widely



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used machine? Elliot Friedman, the vendor's chairman, bullishly asserts that DEC will become the No. 2 manufacturer of personal computers, displacing Apple Computer. The Pro 350, in turn, will become DEC's leading machine because it can be tied to the computer-maker's powerful mini-computers.

Propel is not sold in stores because the vendor believes professionals in the Fortune 1,600 corporations don't buy from retail outlets, and that's the market Pro Computing is taking aim at. Pro Computing offers support to corporate users—at \$40 an hour. The package is also a little pricier than others, at \$1,195. Without the phone features, Propel costs \$950. For more information, call Pro Computing at (212) 695-2885.

Context Management Systems, one of the leaders in integrated software with its Context MBA package, has introduced Corporate MBA. The

new package adds three features to the old. First, Corporate MBA has an IBM 3270-emulation capability that allows users to access big databases. The package also allows users to trade data with other personal computers using the same package. Corporate MBA also lets users condense oft-used functions into a simple set of keystrokes.

Corporate MBA runs under the MS-DOS operating system and costs \$895. For more information, call the vendor at (213) 378-8277.

An integrated package has been introduced by Corvus Systems for its own personal computer, the Corvus Concept. The package, called ISYS, offers word processing, spreadsheet analysis, graphics, list management, data communications, and other features. It costs \$495. For information, call the vendor at (408) 946-7700.

A package that links Lotus Development Corp.'s 1-2-3 integrated

software and Execucom's Interactive Financial Planning Systems is offered by Clarity Software Corp. Called 3-2-1 Go, the package runs on an IBM PC equipped with 1-2-3. It converts the Lotus worksheets into models that can be added to either the mainframe or microcomputer versions of Execucom's IFPS. The \$2,000 package will run on IBM PC-compatible personal computers, too. For information, call (512) 258-5473.

AT&T's speedy analog replacement

A new communications technology called Circuit Switched Digital Capability (CSDC) allows corporations to transmit voice, graphics, and data at speeds as high as 56,000 bits (or 56 Kbits) per second using conventional

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Developed by AT&T's Bell Laboratories, CSDC transmits information using digital impulses, rather

than conventional analog signals. Analog signals travel at speeds of less than 9.6 Kbits per second. CSDC's 56-Kbit-per-second rate enables telephone companies to support a host of digital-communications services, in-

cluding bulk data transfer, teleconferencing, encrypted voice, and high-speed facsimile. A typical facsimile service now transmits at the rate of about 12 pages per hour. Using CSDC, the transmission rate will increase to about 900 pages per hour, or one page every four seconds.

A CSDC user dials into the service using a five-digit access code, and then dials the number of the destination. When a link is established, the connection can alternate between voice and data transmissions.

Unlike other digital systems that operate on standard telephone wiring, CSDC can handle two-way communications. Normally, this is unfeasible because signals traveling in one direction interfere with those moving in the opposite direction. To solve this traffic problem, Bell Labs deploys a time-compression multiplexer to send and receive data. The multiplexers send and receive signals in alternating bursts, first sending and then receiving. This isn't simultaneous two-way communications, but the speed at which messages are sent and received will give the users the impression that it is.

CSDC comprises a 1AESS data switch and software. Minor modifications to the local telephone lines are also required. Local telephone companies expect to install CSDC in over a dozen cities by the end of this year. For more information, contact Bell Laboratories at (201) 564-4097.

Stay abreast of VDT health news

Do your data-entry clerks complain of backaches, fatigue, or more serious problems—and blame them on their video-display terminals? The possible health problems caused by VDTs are the subject of a new newsletter reporting on the health and safety issues confronting VDT operators.

Mark Pinsky, editor of *VDT News*, claims that millions of operators in this country "don't understand the

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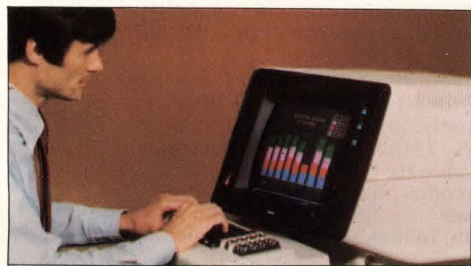
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4027™ and Ramtek 6211™. You don't need special hardware or software to interface with the VideoSlide35. You can use standard Ektachrome™, or if you want slides really fast, Polaroid's new Polachrome™ 35mm auto-process slide film.



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health risks of VDTs." By implication, their managers also may not understand the full range of health issues associated with VDTs.

Eyestrain and backaches are common complaints among VDT operators. More serious allegations—that the radiation emitted by terminals can cause miscarriages or fetal abnormalities—are still being investigated. A report issued last year by the National Academy of Sciences asserted that enough research had already been conducted on VDTs to conclude they do not cause harmful effects. But that report came under sharp criticism by its own sponsor, the National Institute for Occupational Safety and Health.

Although most experts recognize ergonomic problems experienced by operators (such as backaches caused by poorly designed chairs), the possible effects of radiation emitted

by terminals remains the subject of debate.

VDT News does not take a stand on any of these issues, says Pinsky. "We aren't publishing because we believe there is or isn't a hazard," he says.

Subscriptions to the bimonthly publication cost \$18. Write to *VDT News* at P.O. Box 1799, Grand Central Station, New York, NY 10163; or call (212) 725-5254.

Lower-cost decision support

Large-system decision support just got smaller and less expensive. Sperry Corp.'s new Mapper 10 system is an adaptation of its mainframe software with its own dedicated processor.

Mapper 10 lets executives, middle

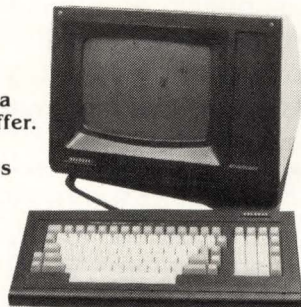
managers, and support staffers extract and manipulate information needed for planning and controlling business operations. It has fourth-generation, interactive software, and provides the facilities of the large-system version, which has been available for about two years, in a piece of hardware. The cost is about half that of existing Mapper configurations on general-purpose Sperry 1100 mainframes.

Mapper 10 offers color graphics, word processing, electronic mail, and other automated-office functions, as well as searches, sorts, merges, and computations. It is designed for non-technical users. For example, the system integrates Mapper Tutor, a built-in tutorial routine. In addition, the software is arranged like a traditional filing cabinet, making it easier to understand. Of course, data-processing professionals will also find

D200 and ANSI Compatibility

Our new Model 7-DDG talks both Dasher* D200 and DEC* VT102 (ANSI X3.64). It is the only terminal that does. As a D200, it has all the features you want, including dedicated user function keys and hidden display attributes. In DEC mode, it's a VT102, with a more extensive ANSI code set.

The 7-DDG has two or four pages of display memory, smooth horizontal and vertical scrolling, two bi-directional RS232 ports and a 256-character input buffer. And it stores up to 32 programmable functions in nonvolatile memory. It even has a time of day / elapsed time clock.



Model 7-DDG.

Unique . . . versatile . . . cost effective.



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*DEC and VT are registered trademarks of Digital Equipment Corp.

CIRCLE 21

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Our new Model 7-DEC talks and acts so much like a DEC* VT102, your computer won't know the difference. But you will.

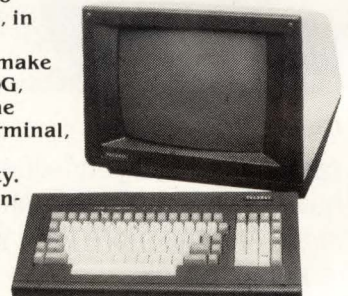
You'll have at your fingertips capabilities that far exceed those of the VT102: Multi-page display memory. Nonvolatile programmable functions. Redefinable keys. 25th status line. 15" display.

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CIRCLE 22

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For 32 years, Nixdorf has been providing solutions for the information processing needs of all kinds of businesses. And today, we're a billion-dollar computer

company with 16,000 people and over 110,000 systems installed around the world.

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news & comment

the system useful. Mapper 10 is a powerful time- and cost-saving tool for developing applications.

Offered with the Mapper 10 system is Sperry's Sufics package, a financial-planning-and-support software system that features risk and sensitivity analysis, hierarchical consolidation, statistical analysis, forecasting, and business graphics. Sperry claims Sufics is more capable than an electronic spreadsheet.

Mapper 10 fills a need for lower-cost Mapper offerings, says Bernard Madden, company spokesman. "Many companies are just not large enough to justify buying large-scale computer technology," he says. The Mapper 10 processor comes in three sizes: An entry-level size priced at \$140,400; a medium size for \$257,655; and a large size for \$350,149. Mapper system software is leased for \$800 a month. For more information call (215) 542-4213.

CBT use accelerating

The use of computer-based training (CBT) is accelerating, particularly as a method of implementing personal computers. This is one of the findings of a survey of 72 Fortune 500 executives conducted by RSA/Information Designs Inc.

Most respondents say electronic courses, or courseware, reduce the cost of training. They also cite as a CBT benefit the ability of trainees to pace themselves and use courseware at their own convenience. Respondents report a faster course completion rate with CBT.

However, the survey results suggest that executives aren't completely satisfied with the courseware available. The biggest complaint of the respondents was the limited selection of CBT courses. They called for more

courses describing successful applications rather than skills-building programs. The study found that although data-processing and technical-training courseware dominate, a broader range of CBT offerings in subjects like management skills and problem solving are becoming increasingly important to user organizations.

Executives also said improvements in quality and content of the courseware are needed, including better support tools to introduce software packages.

The survey results indicate that CBT is most often used as a training tool on mainframes, but that personal computers are running a close second. Within the 27 organizations in the survey that offer CBT, terminals connected to a mainframe are the primary delivery system (51 percent), followed by personal computers (38 percent), and minicom-

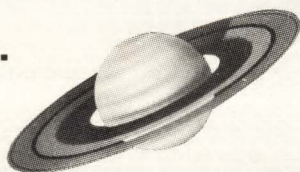
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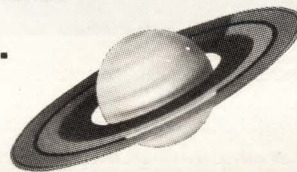
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CIRCLE 25

Having several different micros within the same company can mean having several major software problems, too. Because you have to purchase or develop different software versions for each micro. And let's face it, constantly rewriting your programs, or having to buy new ones, soon strains any budget.

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The p-System is like nothing you've ever seen before. Because it's more than just "portable" software. It's the world's only Universal Operating System.™

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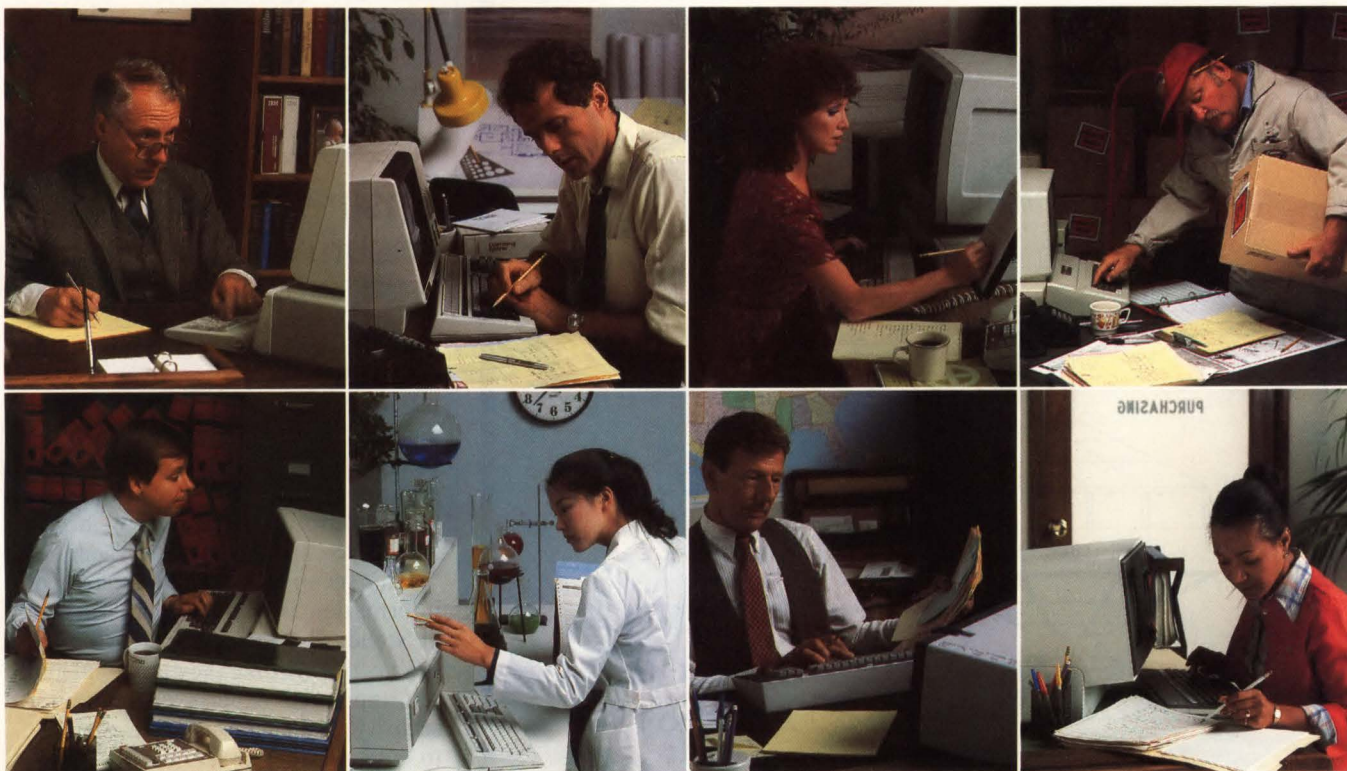
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CIRCLE 26

NEWS & COMMENT

puters (11 percent). Among respondents, an overwhelming 90 percent use IBM mainframes for CBT. Personal-computer usage is, for the most part, equally divided between IBM and Apple Computer, at 45 percent each.

The 74 respondents hail from 68 different corporations, predominantly in the financial-services, insurance, and manufacturing industries. Fifty-three percent of the respondents work in data processing or have technical training; the remainder work in human resources. Of the 68 corporations polled, 40 percent offer CBT; 60 percent do not. But of the 41 corporations in which CBT is not used, 46 percent plan to introduce it within a year, and 17 percent plan to do so within five years.

Copies of a report on the survey, entitled "The Market for Computer-Based Training in Business and Industry—'83," can be purchased

through RSA/Information Designs for \$185. For information, call (212) 673-0848.

High-tech hotline

A leading purveyor of high-technology product information and a software house have joined forces in a new online service. The Datapro/Online service brings together the database of Datapro Research Corp. and the database-access software of Data Resources Inc.

Datapro/Online provides subscribers with information about computers, software applications, system prices, and a host of other data about high-technology products and the companies that make and sell them. Datapro directories are updated monthly; current offerings include directories of microcomputer software, general software, small com-

puters, and online services.

Using EPS Plus, Data Resources' proprietary software, users can conduct searches according to a variety of criteria. The software also allows users to plug information into bar graphs, pie charts, and other graphic displays.

Datapro/Online can be accessed day and night by any ASCII terminal equipped with a modem. The annual charge of \$250 includes free training; users also pay \$120 per hour to use the service. For more information, contact Data Resources at (617) 863-5100.

A quick scan for IRS

The Internal Revenue Service is trying to simplify its operations this year by optically scanning certain tax returns. They're the Form 1040EZ, which can be used by a single person with no dependents who has taxable income of \$50,000 or less and interest income of no more than \$400.

According to the "J.K. Lasser Monthly Tax Service," optical scanners will read the figures on each form. Taxpayers must cooperate by placing each digit of a figure inside a box.

Unsure about security? Ask NBS

Computer security has become a watch-phrase in the wake of revelations about "the 414s" and other suspected digital trespassers. And yet, no agency has been able to quantify the losses to thieves or the potential threat to corporations. Just how vulnerable are your computers, and how much should you spend to secure them?

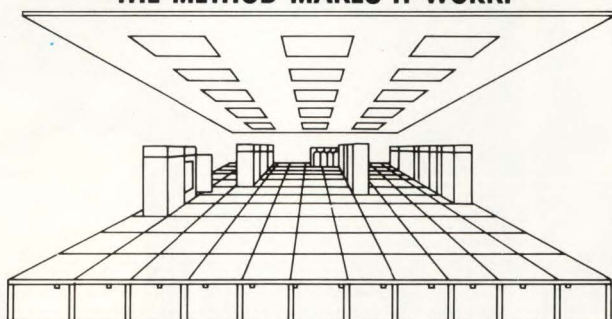
One seemingly credible source of information is the National Bureau of Standards. At the very least, NBS is objective. Unlike the many real and self-appointed experts on computer security, NBS isn't using its analysis to sell a product or service. (Continued)

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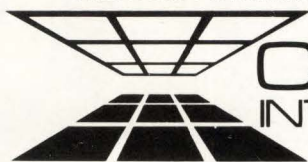
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NEWS & COMMENT

Experts at the NBS believe recent assessments of the high vulnerability of our national-defense computer network and the computers of major corporations are probably extreme. "Between 80 percent and 90 percent of the [security] problems have been addressed and could easily have been avoided using available administrative procedures and [existing] technology," John Lyons, acting NBS director, recently told a House subcommittee investigating computer crime.

Contrast that statement to one recently issued by the Research Institute of America, a New York-based organization. An RIA special report estimates that white-collar computer fraud, embezzlement, and other crimes account for a \$70 billion annual drain, and another \$30 billion in annual losses can be traced to theft, inventory shrinkage, and unidentified pilferage. The key word is *estimates*.

RIA's figures are apparently based on the observations of an expert.

NBS advises a common-sense approach to computer security. An agency study of various approaches to security revealed that passwords—if properly implemented and used—are an economical, effective way to control initial user access to distributed computer systems. NBS is working on a proposed password standard that takes in 10 security criteria. In order to meet the standard's requirements, future password systems would have to include each of the criteria.

NBS has already designed a standard for systems that translate data into code for transmission. The NBS Data Encryption Standard, published in 1977, is now available commercially for as little as \$250. NBS has numerous publications on computer security. For a copy of List 91, which details these publications, write

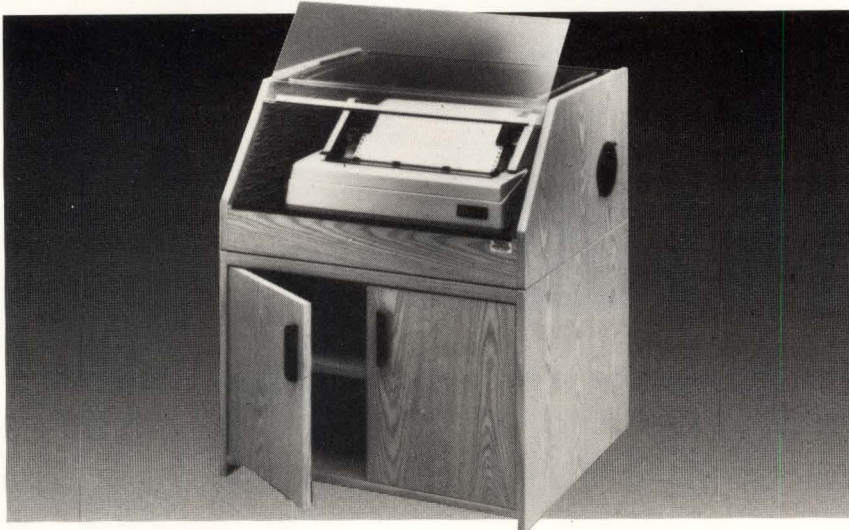
NBS, Institute for Computer Sciences and Technology, Washington, DC 20234.

Online IBM PC software guide

The One Point Electronic Catalog from ITM can help solve an information manager's research and buying needs by providing users with an online database of business and IBM PC-compatible software. It is available is available for a startup fee of \$100.

The catalog is easy to use. It provides "up-to-the-minute" product descriptions and evaluations of packages by end users, software reviewers, and consultants. Products listed in the catalog are usually for sale at up to 30 percent off list price. For more information on ITM's One Point Electronic Catalog, call (415) 947-0850.

New SONEX Printer Covers



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Here's a quiet solution to noisy computer printers from the sound-proofing experts at the SONEX division, where this unique anechoic wedge-shaped acoustical foam has controlled industrial, computer and pro audio sound for years. Now available in a printer cover, SONEX can be ordered directly from our factory. To learn more about our printer covers and the sound control technology behind them, call us at 612/521-3555, or write for our free color brochure: 3800 Washington Ave. North, Minneapolis, MN 55412.

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CIRCLE 18

IBM awards grants

As part of a \$50 million program to encourage excellence in manufacturing systems, IBM will award state-of-the-art computer systems to 20 universities. John R. Opel, IBM chairman, announced, "We are on the threshold of a new era in manufacturing technology and there is a critical need in industry for people who can make full use of that technology and enhance it in years to come. There can be no factories of the future unless there are universities of the future educating those people now."

The universities to receive the grants are in 14 states and the District of Columbia. They will receive a total of \$40 million in equipment, including IBM 4341 computers and CAD/CAM systems. An additional \$10 million in cash will be given to five other universities to assist in the implementation of improved manufacturing-systems curriculums at the graduate level.

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Finally, there's a single, universal way to satisfy the individual information processing needs of all your people. From sales manager to accountant. From research to production. The Lee Data Universal Terminal System can do it all.

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Our System not only offers standard 3274-compatible local and remote control units, but now also provides combination local/remote controllers with a unique dual-host access capability.

In addition, you can choose from a full line of terminal capabilities, beginning with our cost-effective 3178-compatible display on up to our popular All-In-One Display which offers, in a single unit, four selectable screen sizes—including 132-column—a great advantage in program development, spread sheet applications and many others where flexibility is required.

3270-plus-Async: another cost-effective advantage

If your application needs currently find you switching between 3270 and VT100-style terminals to get the job done, Lee Data has a better way.

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running on an IBM CPU, non-IBM systems (such as DEC, H-P or Prime), as well as timesharing services. Another Lee Data solution to simplifying your company's terminal network.

And now integrated personal computing too

That's right! Now our System also includes a sophisticated personal computing package that can easily be integrated into an existing Lee Data 3270 system.

With our approach, you get continued interactive access to host-based files, plus all the advantages of

professional business computing from the same Lee Data workstation.

Advanced features include a host file transfer capability, a single-board design, four standard system expansion slots and, of course, complete IBM-compatibility.

All these additional capabilities plus the same user-friendly Lee Data displays.

Plus these added benefits...

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Combine this with all the outstanding features already mentioned and you'll find a System offering everything you need for efficient, cost-effective operation.

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CIRCLE 29



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by Susan Foster, Microsystems Editor

PERSONAL COMPUTING

Will you be trampled by technology?

Stand back, personal-computer users, or be trampled by vendors racing to bring the newest technology to market. In all the rush, it's easy to make a mistake in choosing among the friendlier computers, light portables, useful local-area networks (LANs), and integrated software introduced recently.

There are a number of ways to dodge this stampede, and end up with products that will best serve your business. First, don't buy a computer that has been rushed unperfected to market. Second, watch out for vendors that don't have adequate resources to support their wares. And, finally, don't become paralyzed by the fear that the hot new computer you buy today will become obsolete tomorrow.

A sampling of the most popular new products will help readers sort out some of the current market madness.

At a time when personal computers are uniformly featuring IBM compatibility, detachable keyboards, and green screens, along comes Macintosh. It also departs from the trends toward 5¼-inch floppy-disk drives for desk-top models and horizontal screens for portables. Macintosh is a 16-pound, vertically shaped computer with a 9-inch diagonal black-and-white screen and a single 3½-inch disk drive. Its 128 Kbytes of random-access memory (not expandable) and 64 Kbytes of read-only memory total about ¼ megabyte for the system. The machine also includes two serial ports, a mouse instead of cursor-control keys, and a proprietary operating system—no MS-DOS here! Although not set as of this writing, its

price will be about \$2,495.

Macintosh uses a new kind of human-machine interface, based on the technology behind Apple's year-old Lisa: You select your task by pointing a mouse at a symbol on the screen. There are no keyboard commands and file names to remember.

Even more options are presented by a "pull-down" menu, which looks like a window shade being pulled down over the upper-left quadrant of the screen. Visual interplay is the key concept behind both Macintosh and Lisa: Apple's engineers believe pictures are more quickly recognized than words, and Macintosh's bit-mapped graphics make pictures—albeit black-and-white pictures—very appealing.

Applebus, the local-area network hardware built into Macintosh, sup-

ports 16 users. "The network runs for 1,000 meters or more, and is about half as fast as Ethernet. We made it so we can throw it out in two years, but can tie the machines together now," explains Steve Jobs, chairman of Apple.

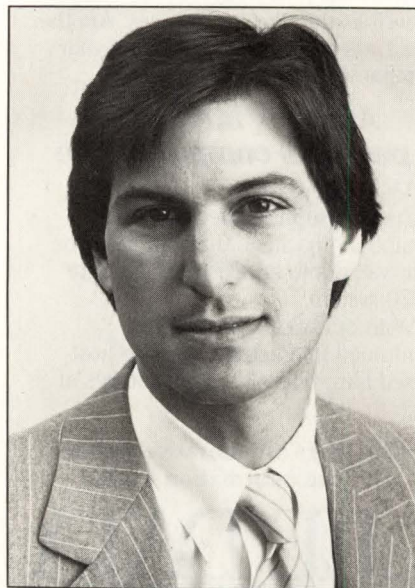
Asked about the limited memory of Macintosh, Jobs replies that, at present, it's impossible to get 256-Kbyte RAM chips at a reasonable price. "But within a year you'll see a 512-Kbyte Mac and an upgrade path."

Macintosh's disk drive has no door—you simply ask the computer to eject the disk. The 3½-inch disks are jacketless yet sturdy—which users of Hewlett-Packard micros could have told you long ago.

For managers concerned about security, there is a hole in the back of Macintosh for attaching a \$49 optional security chain. Other options include a \$100 carrying case, an OEM-built 300- or 1,200-baud modem (\$225 and \$495, respectively), an external disk drive that will be available next month for \$395, and a \$550 printer.

As of this writing, compatible software includes Macwrite, a word-processing program, and Macpaint, a graphics package, which are available together for \$195. Forthcoming are Pascal; Basic; an Assembler/debugger; an IBM 3278-emulation package; a project-management program; Logo, a language for teaching children; and a free-form drawing program. All Macintosh applications are being written to let you move information back and forth between your programs. Apple intends to sell all packages for about \$100 each.

What does Macintosh represent



If you're in the market for color micros, Steve Jobs, chairman of Apple Computer, recommends the Apple IIe over the Macintosh.

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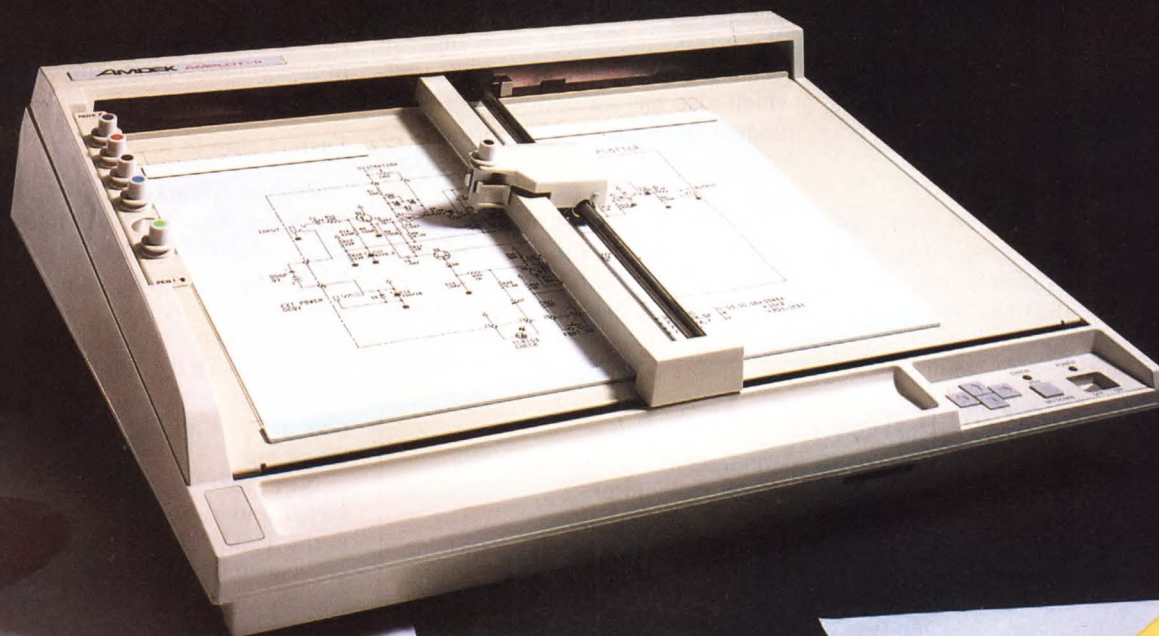
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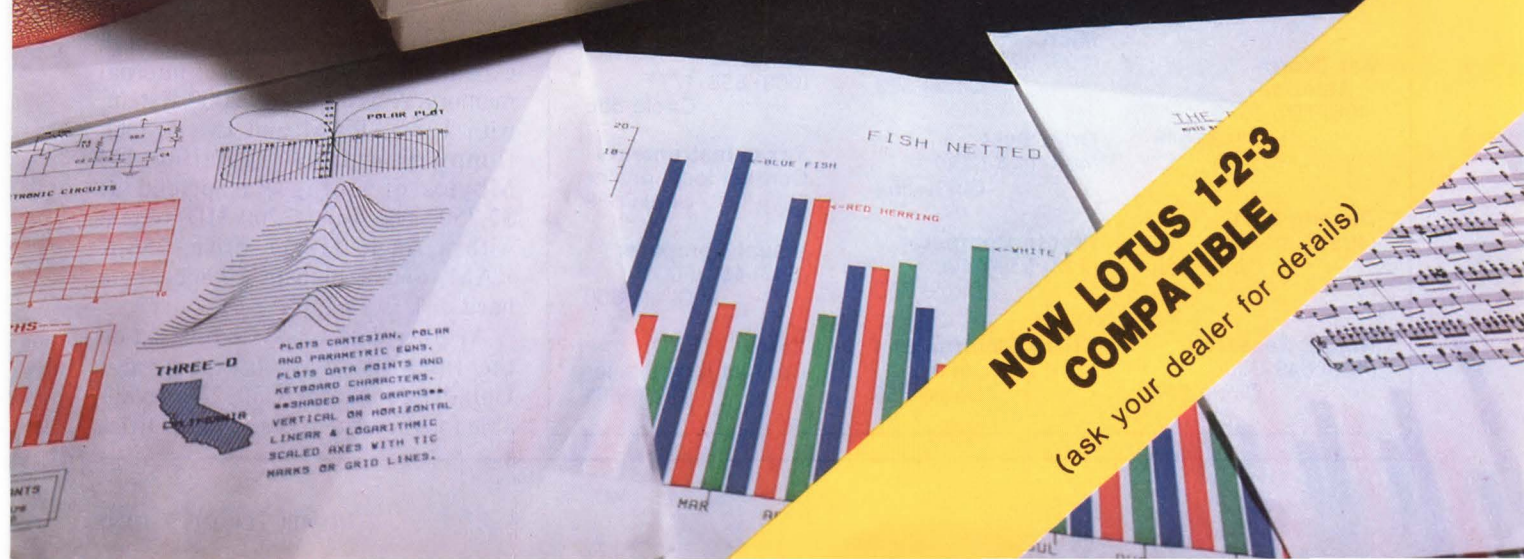
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PERSONAL COMPUTING

for the corporate user of personal computers? That depends as much on your long-term plans as on your present needs. If portability, easy learning, Lisa compatibility (Lisa runs Mac's software, but Mac doesn't run Lisa's.), a mouse and windows, and high graphics resolution are high on your needs list, Macintosh warrants further investigation. If you're looking for a 32-bit architecture (16-bit external, 32-bit internal) based on the Motorola 68000 processor and if your desk space is limited, you should also consider Macintosh.

But if multi-tasking capability is important, Macintosh will not fill the bill. Its limited memory capacity lets it run only one application at a time. If you foresee a need for memory greater than 128 Kbytes of RAM in the near future, Macintosh may not be your best choice. And if you want color, Jobs recommends the Apple IIe over Macintosh.

Lineup of portables

Macintosh isn't the only new lugable introduced recently. Texas Instruments' Portable Professional Computer (\$2,395) has 64 Kbytes of

expandable memory; an internal modem (which Macintosh doesn't have); a 5¼-inch disk drive; and an optional hard disk, which costs \$1,795 for 5 megabytes and \$2,995 for 10 megabytes. It is compatible with the TI Professional Computer and connects to both the Professional Computer and the IBM Personal Computer via EtherSeries, Xerox's new LAN.

Xerox has announced a 5-pound, briefcase-size portable. The 1810 includes 64 Kbytes of RAM, CP/M compatibility, an 80-character, three-line display, and a built-in modem for \$2,195. From Sharp Electronics comes the Commuter Computer, the PC-5000 portable announced last May, but not available until now. Price: \$2,000. Its liquid-crystal display offers eight lines by 80 characters. An eight-hour built-in rechargeable battery powers the unit, which also has an optional auto-dial modem and a printer. The printer fits into the computer without increasing its size.

To combat the difficulty of purchasing wisely in this crowded market, remember that Visual Computer Corp. is also making a Commuter

Computer, but this one is IBM-compatible. For \$2,000, you get 128-K memory expandable to 512-K, the MS-DOS operating system, a complete 83-key keyboard, a 5¼-inch floppy-disk drive, bit-mapped color-graphics support, and an optional 80-by-16 character liquid-crystal display.

Another noteworthy IBM-compatible portable is Apricot, a 16-bit model from England. (U.S. distributor is Act [North America] Inc.) This 8086-based system comes with 256-K memory and three operating systems—MS-DOS, CP/M 86, and Concurrent CP/M 86. It uses 3½-inch disk drives. An 80-character screen built into its keyboard doubles as a window, displaying two 40-character lines that let the computer operate without its crt. Weighing 17.5 pounds, Apricot has a 9-inch screen, programmable keys, and a price tag of \$2,495.

Fastest chip in town

Pronto Computer Corp. has announced the first transportable supermicro. It's based on Intel's 80186 16-bit microprocessor, which is considered the fastest chip in town. The "Transportable Solution" runs under MS-DOS, has 256-K RAM, and comes with two 5¼-inch floppy-disk drives—all for \$3,950. It weighs 22 pounds.

Not portable, but also 80186-based and running under MS-DOS, is the Tandy 2000 Personal Computer. The unit has a detachable keyboard and an optional mouse. It comes in two configurations, both expandable to 768 Kbytes of internal memory. A basic Tandy 2000 system, with 128-K RAM and two 5¼-inch floppy-disk drives (totaling 1.4 Mbytes of storage) is priced at \$2,750. The Tandy 200 HD system with a single 5¼-inch drive, 256-K RAM, and a built-in 10 megabyte hard disk is \$4,250.

Another desk-top system based on the Intel 80186 is Onyx System's Unix-based Model C5012D. Available for the system is an Onyx Office

For more information

Further information on the products mentioned in the accompanying article can be obtained from the following manufacturers.

Apple Computer
Contact local dealer
Circle 548

Kaypro
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Circle 552

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CIRCLE 31

PERSONAL COMPUTING

software package for \$4,994. Its spreadsheet, word-processing, electronic-mail, and database-management features are tied together by a series of simple menus. The computer comes with 512-K RAM, five serial ports, a $\frac{5}{4}$ -inch Winchester-disk drive with 14 or 21 megabytes of storage, and a 10 megabyte cartridge-tape drive. System prices begin at \$11,490.

What's new in nets?

Local-area networks have also been on everybody's mind. Kaynet from Kaypro allows up to 20 Kaypro II, 4, or 10 computers to be connected in any combination of up to 60 computers. Price depends on configuration.

Announced a short time ago, and available now, is Multilink from Davong Systems Corp. This LAN allows up to 255 IBM PCs, IBM PC

XTs, and plug-compatible computers to be connected, to communicate, and to share resources. Based on Data-point's Arcnet, this LAN supports most widely used operating systems.

Don't become paralyzed by the fear that the hot new personal computer you buy today will be obsolete tomorrow.

It allows up to 20,000 feet between any two workstations. Suggested retail price is \$700 per attached workstation.

The slew of products to appear during the last few months points increasingly toward a trend in window-management software, which is frequently mistaken for

integrated software.

Integrated applications are single packages that combine the functions of several separate applications. They let the user transfer data easily among the different applications, eliminating much re-entry. The user need only learn a single set of commands for the different applications. The number of applications available varies from package to package.

But window-management software is different. The first such product, Windows from Microsoft, is an enhancement of MS-DOS that allows applications to run on many personal computers and to exchange data. Windows frees you from compatibility worries. It also allows software developers to create graphics-based integrated packages. Like Macintosh software, Windows incorporates both a mouse and bit-mapped graphics. The mouse controls movement of data between several applications on the screen. Windows will be bundled into the personal computers of 23 major vendors.

And from Digital Research, a new version of Concurrent CP/M features windows that let users view the execution of four applications simultaneously. Windows with separate background and foreground colors can be positioned anywhere on the screen, scrolled, or sized to display the most important parts of each application. Information can be cut and pasted from applications simply by placing a window over the data. Enhanced support for data communications lets users devote one task to communications between their personal computers and other micros, minis, or mainframes. Suggested price is \$150.

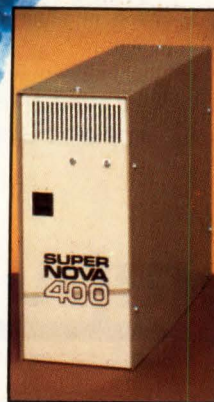
If all these products seem alike, it's because they use the same technology. Although the details of each product may vary, it's the packaging, advertising, and promotion—not the special features—that are selling personal computers. This indicates a buyer's market, so take it slow. Customers can choose to be trampled or to leave with big winnings. □

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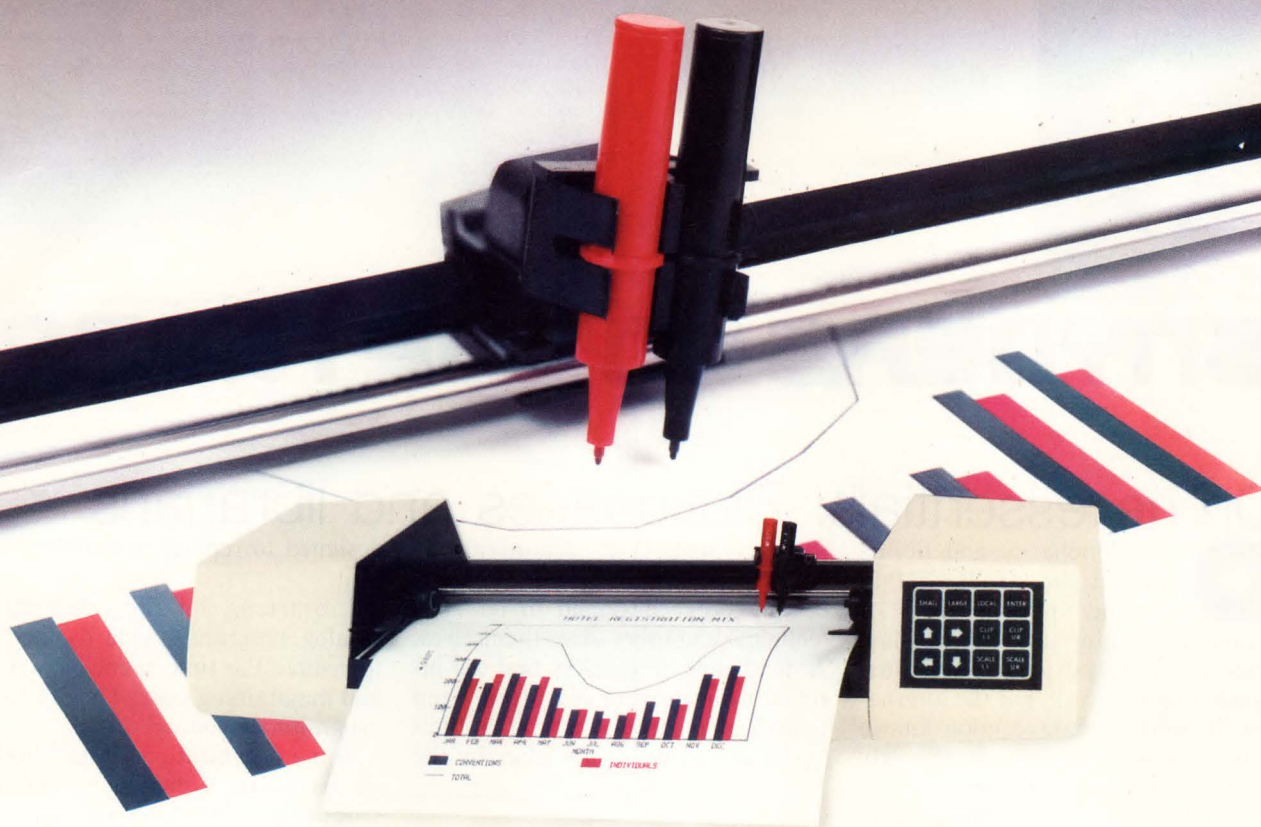


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by Jan Snyders, Midwest Editor

SNYDERS ON SOFTWARE

Online essentials: Dictionaries and librarians

Data dictionaries and librarians set the standards that are the underpinnings of sound online information processing. Each is relatively expensive and time-consuming to install, but the alternative is either a data catalog known only to those who wrote it or costly programming redundancies.

Although they serve different core groups of professionals, dictionaries and librarians are related by their links to effective database management. Dictionaries contain the definitions of files stored in the database, and enough information to locate files even if they're not identified correctly by users. Indeed, some experts assert that by promulgating standards during the installation of a data dictionary, an organization does the groundwork necessary to install a database management system.

Dictionaries have become increas-

ingly important as organizations advance toward an information-processing order designed to let non-technical end users serve themselves. A dictionary helps users find the information they need, often even though they aren't sure of a file's "official" name or location in the

"Our librarian gives us better control over programs and the ability to track changes."

Gonella, Schindler Haughton

database. Dictionaries can also eliminate the irony of users who are mystified by the database system having to ask technicians to get data for them: If that practice isn't, in effect, the "batch" processing DBMSs are

designed to replace, it's pretty close to it.

Librarians, on the other hand, catalog program standards, helping to reduce the time spent on writing and maintaining code. They're really programmer tools.

Some organizations install both a librarian and a dictionary—at considerable time and expense—to maintain order in the way programs are written, stored, and retrieved. John Gonella, software-support manager, and John Seab, senior programmer/analyst, say they couldn't live without librarian and dictionary software. Their situation may actually be less extreme than that, but the two packages from Applied Data Research Inc. certainly make their work at Schindler Haughton Elevators Corp. (Toledo, OH) a lot easier.

"The librarian gives us better control over our programs and the ability to maintain and track changes," says Gonella, referring to ADR/Librarian. Seab says ADR/Datadictionary has improved the accuracy and availability of resources to programmer/analysts.

Schindler Haughton is a three-faceted business. It manufactures elevators, installs them, and also services any other brand of elevator. Schindler is the company's European arm; Haughton employs 2,000 in the United States. The company has a 4-Mbyte IBM 4341 and 125 IBM 3278 or compatible terminals.

ADR/Librarian was installed about seven years ago, when Schindler Haughton Elevators was using a card system to keep track of its library of applications packages. The



Ronald Lorenz' first priority when he joined Lake Shore National Bank two years ago was to install a librarian package that would improve security.

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manufacturer needed to maintain tighter control of information about the packages, says Gonella. "One of the beauties of this package is its ability to tell me exactly how many programs we have," he says. "In the Cobol library, we have 1,846 programs representing about 800,000 source statements." The inventory feature of Librarian makes it much simpler to change a file that's used in a number of programs, says Gonella.

ADR/Datadictionary was installed along with ADR's database management system in August 1982. It was needed, says Seab, to remedy a lack of control and accuracy of program documentation. The documentation for any particular system—if it existed at all—was outdated, unreliable, and difficult to access, he recalls. Now, the senior programmers are required to enter changes into the dictionary. Any new development, including updates of files, records, and field-communication instructions, is posted directly through the dictionary.

Managing programmers

Librarians and data dictionaries are adept at managing documentation and software packages, but they also help to manage programmers. At the U.S. Army's Armament Munitions and Chemical Command (AMCCOM) in Dover, NJ, a combination librarian and dictionary was installed last year to keep a small army of programmers in line.

AMCCOM does research and development on weapons, munitions, and chemical systems for the army. About 50 of its 6,000 employees are assigned to the Battlefield Automated Support Division, a data center that develops and supports software used by AMCCOM's engineers. The center has three 4-Mbyte DEC VAX 11/780s and several DEC PDP-11/34s, which are linked to about 50 DEC VT-100 and -132 terminals. One of the VAX computers is used for word processing, among other tasks; one is used for data reduction, and the third handles software support

for the packages deployed with weapons systems.

The division installed Change and Configuration Control (CCC) from Softool Corp. last October when it began developing software systems

that each required a large number of programmers. CCC became the database of information about each of the projects under way, says Mary Gregg, computer specialist. "When problems are discovered in a system,

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16. Allow unlimited occurrences of differences	✓			
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we need to be able to go back to the original software to study and correct the problem," says Gregg. "And we need to keep both versions." Thus, CCC also is a touchstone: Staffers can call up both versions of a changed program and compare them line by line. This is a real boon, given the number of programmers working on each project, says Gregg.

Many organizations don't need both librarian and dictionary packages. Choosing one is a widely used strategy. The choice depends on an organization's priorities. Organizations that need an inventory of applications programs generally install librarians.

Dictionaries are best for data cen-

ters that do a lot of data updating. Installing a data dictionary is a yeoman undertaking. Many organizations install a librarian to prepare the way for a data dictionary.

Librarians and dictionaries each have advantages, as a rundown of current offerings in both categories reveals.

DICTIONARIES

The common themes running through all user stories about their experiences with data dictionaries are data security and integrity. "A central dictionary ensures integrity; standards will be observed," says Jody Torke, staff information-systems analyst at A.O. Smith Corp., a

diversified manufacturer and computer-service company based in Milwaukee. "If you look at data as a corporate asset, you've got to be able to effectively control and manage them."

In January 1982, A.O. Smith installed Integrated Data Dictionary from Cullinet Software to solve several problems. The package is running on a 16-Mbyte IBM 3033, which is accessed by 600 IBM 3270 terminals. "Data were becoming lost in the shuffle between applications," recalls Torke. "Our data were not consistent."

Using IDD, data-center staffers standardize documents, records, and applications that will be placed in the

Data dictionaries

Vendor	Package	Requirements	Price	Circle
Applied Data Research (201) 874-9000	ADR/Data-dictionary	IBM 370, 43XX, 30XX, and PCMs IBM 4321, 4331, 370 /115, /125 /135, /138, and PCMs	\$34,000/OS \$28,100/DOS \$21,100	523
Cincom Syst. (513) 662-3200	DCS	IBM 360 and up	\$35,400	524
Computer Corp. of America (617) 492-8860	Dictionary/204	IBM 360, 370, 43XX, 30XX, and PCMs	\$25,000	525
Cullinet Software (617) 329-7700	IDD	IBM 370, 43XX, 30XX, and PCMs	\$35,000	526
ESI (904) 224-5182	Datapulse	Burroughs mainframes	\$10,000 to \$21,000	527
Haverly Syst. (201) 627-1424	SGD	IBM 360, 370, 43XX, 30XX, and PCMs	\$18,300/OS \$14,500/DOS	528
Information Builders (212) 736-4433	Focus/DD	IBM 370, 43XX, 30XX, and PCMs	\$12,000	529
Manager Software Products (617) 863-5800	Datamanager	IBM 360, 370, 43XX, 30XX, and PCMs	\$9,000 and up	530
Mathematica (609) 799-2600	DBIS	IBM 370, 43XX, 30XX, and PCMs	\$6,000 to \$12,000	531
Productive Software Syst. (612) 920-3256	Robot/3000	HP 3000	\$5,000	532
Software AG (703) 860-5050	Predict	IBM 370, 43XX, 30XX, and PCMs	\$10,000	533
TSI Int'l. (203) 853-2884	Data Catalog 2	IBM 360, 370, 43XX, 30XX; Honeywell Level 66; and Sperry 1100	\$12,000 to \$20,000	534
University Computing (214) 353-7100	UCC-10	IBM medium and large mainframes, and PCMs	\$25,000	535



"Our dictionary interfaces to an application-development tool, and it shortens the time required for programming."

Arnold, Texas Air Control Board

database. But even applications that are not used in conjunction with the database are run through IDD. The result is discipline in data structures and documentation, as well.

One of the benefits of establishing data structures with integrity is the resulting consistency. "Without a dictionary package, we'd spend days searching programs for items that have to be changed," says Ronald Henderson, technical-support analyst at Van Kampen Merritt Inc., Naperville, IL. Van Kampen Merritt, a municipal-bond wholesaler recently acquired by Xerox, has two 3-Mbyte HP 3000s. The firm installed Productive Software Systems Inc.'s Robot/3000 to replace an internally developed system that couldn't automatically update files in the company's three databases to reflect discrete changes. Robot/3000 performs daily updates.

Great Western Savings & Loan Association (Northridge, CA) also installed a dictionary to bring some semblance of consistency to its programs. Programmers need to know which data are available and where they are located to retrieve them in a consistent manner, says Kenneth

Cruze, vice president of quality assurance. And UCC-10 from University Computing gives them those capabilities.

Great Western, with \$17 billion in assets, is part of Great Western Financial Corp. It has two 16-Mbyte IBM mainframes, a 3081 and a 3083, which are linked to automatic teller machines and IBM 3278 terminals in 300 branch offices.

About four years ago, Great Western installed IBM's IMS, a database system that includes a data dictionary. When Cruze joined the S & L as database administrator about a year ago, he decided to replace the embedded IMS dictionary with a new data dictionary. The IMS dictionary provides a way to define data, he says, but programmers can't structure them into usable form. "They could only produce listings of data elements," says Cruze. In November 1982, Cruze replaced the IBM data dictionary with UCC-10.

The dictionary is his department's most important tool, says Cruze. The database-administration staff uses UCC-10 to chart the interrelationships between the applications that share the IMS database. "If we were just doing one job at a time, we wouldn't need the dictionary," says Cruze. "But when you have a database group supporting 400 programmers and analysts, you can't do the job without a dictionary."

Maintenance savings

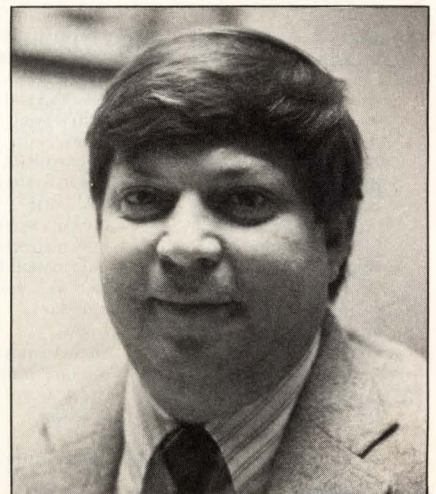
Dictionaries also help cut costs. Weyerhaeuser Co., the big Tacoma, WA-based building- and paper-products manufacturer, has cut the cost of maintaining its software systems by 12 percent since installing Manager Software Products' Datamanager. The savings were achieved by cutting the amount of time programmers spend maintaining Weyerhaeuser's database and library of programs.

Weyerhaeuser, with \$4 billion in sales last year, has a mammoth information-processing establishment. The data center has three IBM

3081s, two 3030s, a 3031, a 3033, and a 4341. Computers made by Honeywell, Hewlett-Packard, and Wang help manage production, and Wangs, IBM 43XXs, and Hewlett-Packard machines are distributed in branches around the country. All of these processors can communicate with one another. Online applications are handled through several hundred IBM 3270 and compatible terminals.

Before installing Datamanager in November 1982, Weyerhaeuser had 12 different data dictionaries, says Larry Rolstad, data-dictionary administrator. Some had been written in-house and the remainder had been purchased as part of other software packages. "It wasn't that dictionaries didn't contain a few pieces of documentation for scattered software packages," recalls Rolstad. "They were 12 uncoordinated packages."

Weyerhaeuser's top information managers decided to install one dictionary to serve all applications-development and maintenance needs at the same time the corporation began converting to IBM systems. Rather than retrace and redocument all of the existing systems, however, Rolstad's staff is putting new applications into the dictionary as they are developed. In addition, applications



A data dictionary has helped reduce redundancies in the Cotton States Insurance Co.'s operations, says information-center director John Austin.

SNYDERS ON SOFTWARE

that are being transferred from Honeywell systems onto the new IBM mainframes are being put into the dictionary. It's an undertaking of giant proportions, and, according to Rolstad, the company has "just

scratched the surface."

"A data dictionary is more than just an applications-development and -maintenance tool," says Rolstad. "When you install a data dictionary, you have to come up with standards

and an organization to support, define, audit, or recommend them. The dictionary becomes a vehicle to provide information on the company data structure."

Some experts and observers would argue that data dictionaries are absolutely vital to the success of management-information systems (MIS). The flip side of an effort to open the corporate database to access by users throughout the organization is the tight control of data that a dictionary can provide.

Cotton States Insurance Co., Atlanta, installed Data Catalog 2 from TSI International when it broadened the scope of its information systems beyond traditional data processing. "When we looked at the impact of corporate-wide information systems, we knew the growth of our systems would have to be controlled," says John Austin, information-center director. "Information management was becoming a nightmare."

Data Catalog 2, which was installed in July 1982, is being used in several ways. First, Austin says, Cotton States is using the dictionary to build a model of an ideal insurance company. "We're getting information from end users, and from what we know about existing systems, to document what an insurance carrier should do. We'll compare that picture to what we actually do." This exercise ties information management closer to strategic planning, pinpointing the responsibilities for information throughout the organization. "We've started to reduce the redundancies throughout the company," says Austin.

Gravy functions

Some users report that data dictionaries have versatility beyond their clearinghouse function, particularly if they're used in conjunction with other software tools. "Sure, consistency is a benefit," says Kay Arnold, director of data processing at the Texas Air Control Board, Austin. "But our dictionary interfaces to an

(Continued on page 59)

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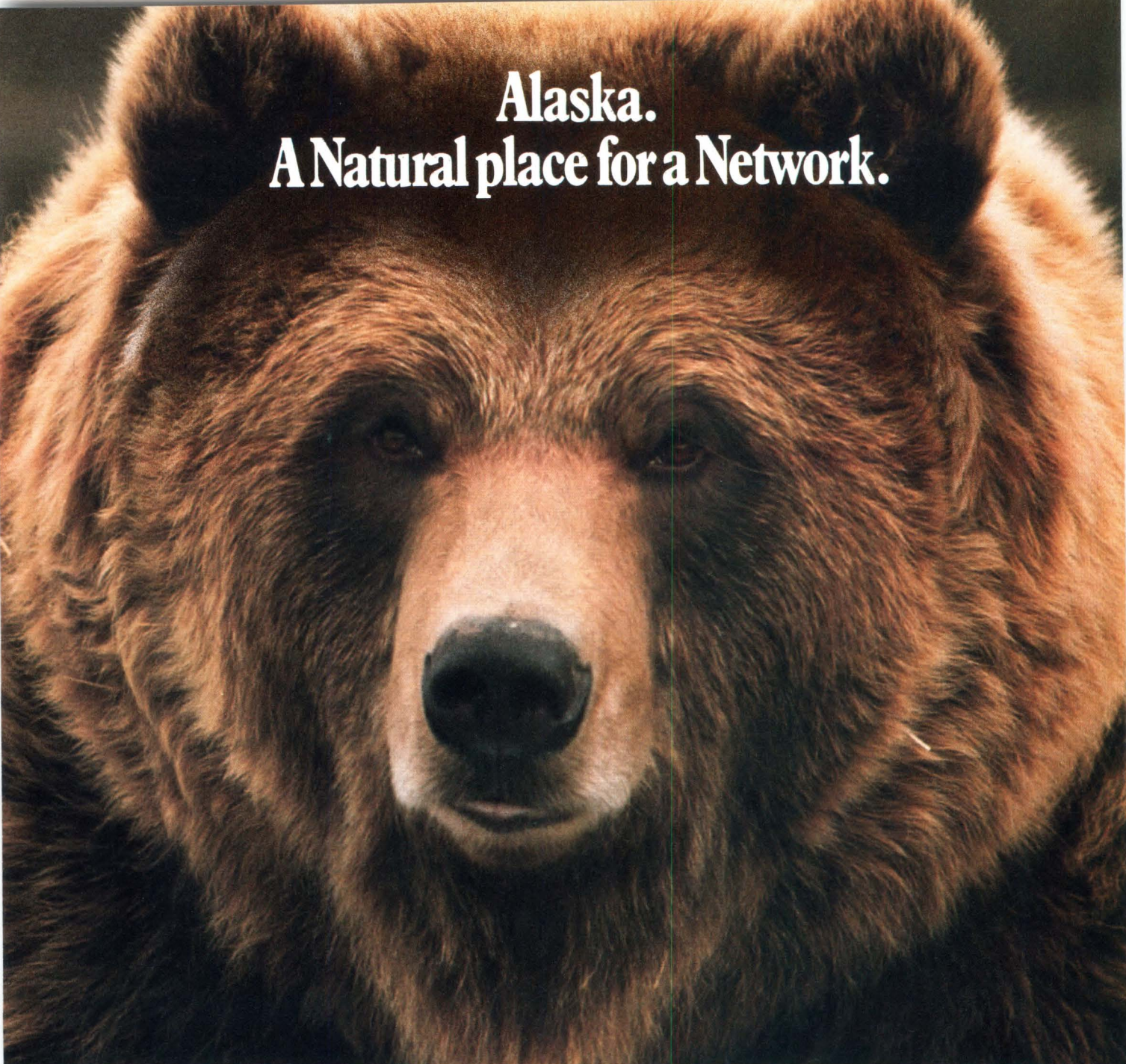
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SNYDERS ON SOFTWARE

(Continued from page 54)

application-development tool, and it shortens the time required for programming."

The board is a state regulatory agency charged with upholding the Clean Air Act of Texas, as well as the federal Clean Air Act. Two hundred thirty staffers based in Austin coordinate the work of some 130 more employees in branch offices throughout the state. About 85 Burroughs TD 831, MT 983, SR 100, and SR 110 terminals are hooked to a Burroughs B6810 with 6.2 Mbytes of storage. A 2.1-Mbyte Burroughs B5920 is used for applications development. The board also uses Niagara Scientific's Datkon microcomputers for specialized applications.

All of this computer horsepower is dedicated to monitoring the air quality in 200 sites throughout the state and to checking industrial compliance with air-quality standards. About 40 of the locations are monitored automatically by Datkon micros.

The board really stumbled onto Datapulse, a dictionary from ESI, when it went shopping for an application generator last year, says Arnold. Datapulse was included with ESI's generator. Arnold's staff quickly scrapped a dictionary project it had been working on, unsuccessfully, for five years, and substituted ESI's package. It was installed last September.

The unexpected benefits of the dictionary arise from its interface with other ESI packages. The connection between Datapulse and Proxy, the applications generator, has reduced development time, says Arnold. Impulse, another tool, facilitates end-user reporting. However, all of these functions are gravy. Without the consistency that Datapulse introduced to the board's records, the interfaces wouldn't work properly. "We have consistent descriptions of what the users need," says Arnold. "For example, Dow Chemical's identification number is the same on every dataset that company appears on. Consistent data is the name of the game."

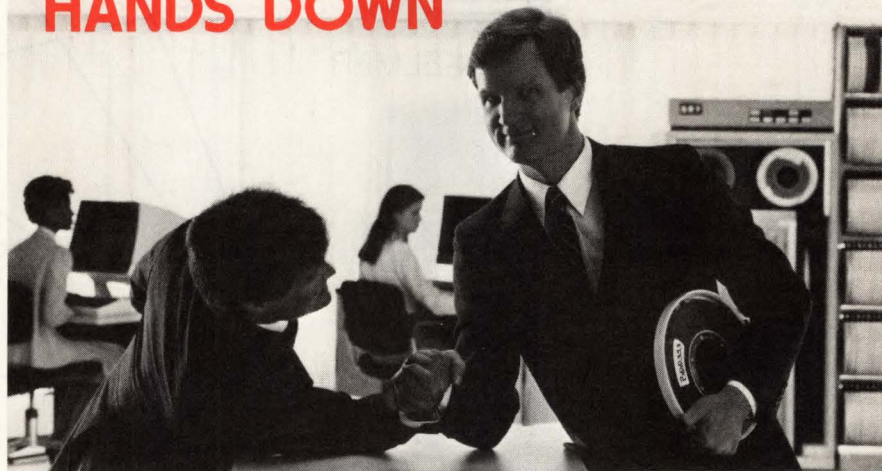
LIBRARIANS

Users of librarian-software packages echo the plaudits dictionary users give their systems for improving security and reducing maintenance time.

"I can't say our package saves money, but the security of data is greatly improved by installing a librarian system," says Ronald Lorenz, manager of data processing at Lake

(Continued on page 62)

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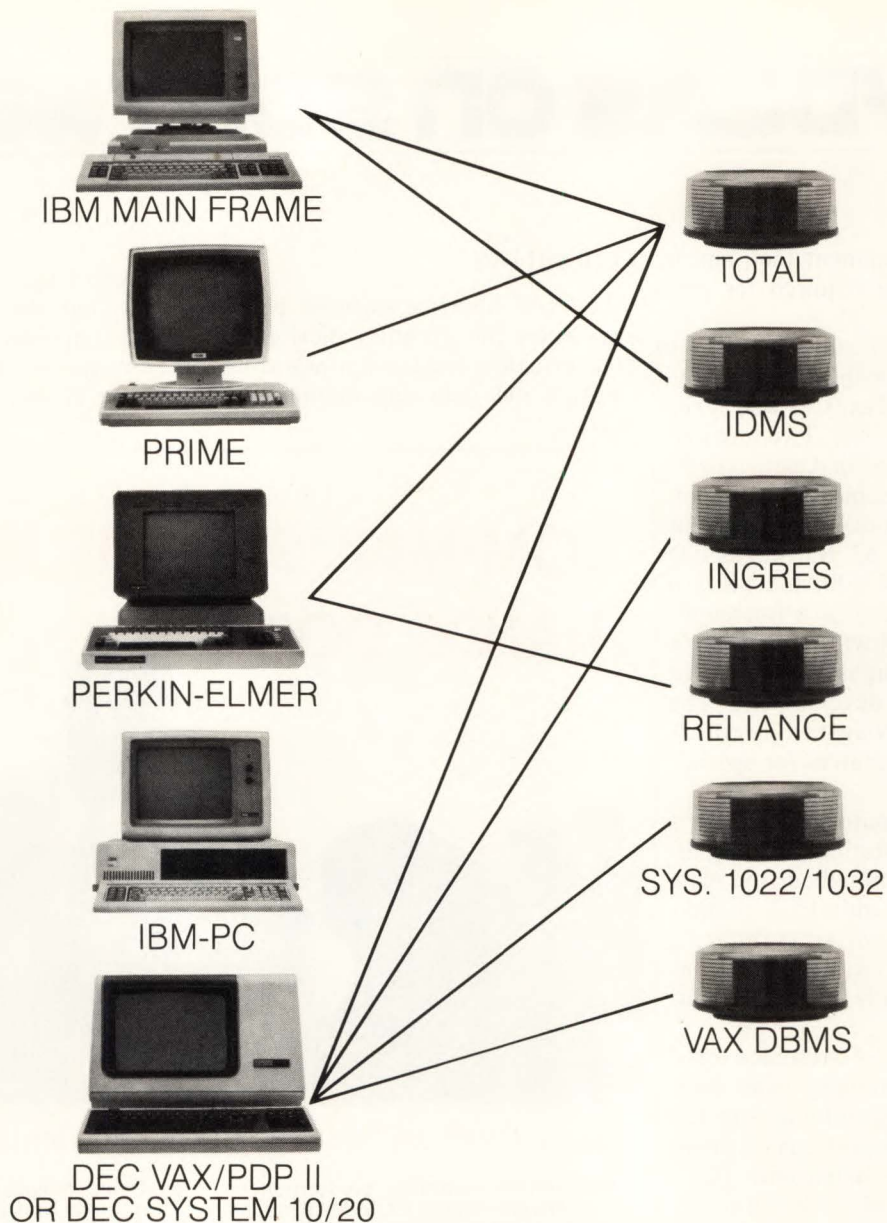
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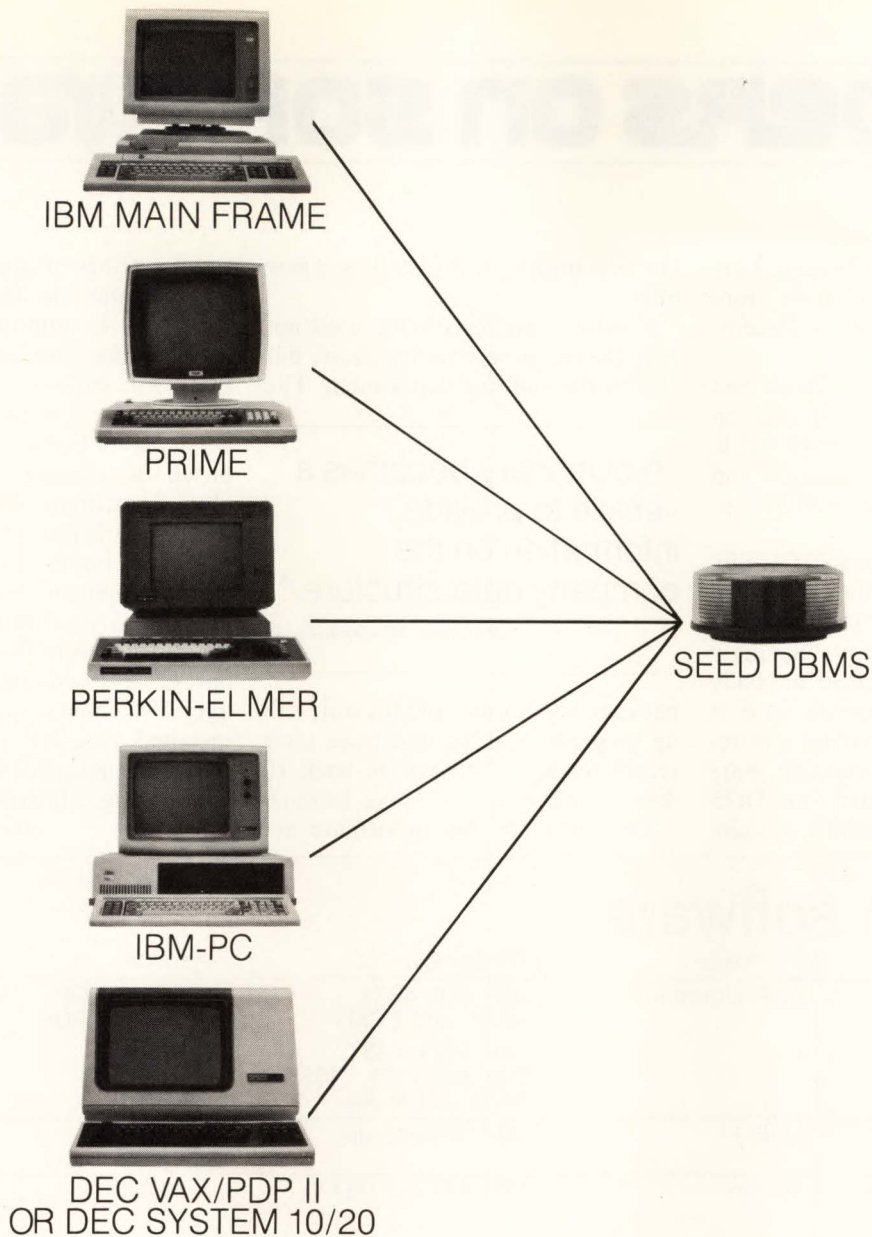
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SNYDERS ON SOFTWARE

(Continued from page 59)

Shore National Bank, Chicago. Lorenz installed Condor/Camlib from Phoenix Computer Corp. in December 1982.

Lake Shore National Bank has \$450 million in assets and uses an 8-Mbyte IBM 4341 with 40 NCR 2251 automatic teller machines and 60 IBM 3270 terminals for online applications.

Before installing Condor/Camlib, the bank used IBM's library system. "All that entailed was IBM's source library," recalls Lorenz. "Security was compromised because anybody could access the libraries, and it wasn't convenient in backup and recovery." Lorenz was hired two years ago, as the bank converted from DOS to the DOS/VSE operating system.

His first priority was installing a new librarian.

Condor/Camlib is being used not only by the programming staff, but also by the auditing department. The

"A dictionary becomes a vehicle to provide information on the company data structure."

Rolstad, Weyerhaeuser

package lets Lorenz and his staff call up program modules and trace their recent history. "We can go back 10 days if we have to," says Lorenz.

Of course, having immediate ac-

cess to strings of program files saves a lot of time, too. If an organization can save 45 minutes of program-maintenance time each day, productivity will increase.

That's the amount of time managers at Savin Corp., a Stamford, CT-based distributor of copying machines, estimate they've saved by using a librarian. As a result, they're squeezing higher productivity out of the development staff. "We've got a lot of employees engaged in heavy development projects and library updates," says Leonard Dashnaw, manager of technical support. Before we installed Flee/XP [from Goal Systems International] in 1979, we were condensing libraries two or three

(Continued on page 188)

Librarian software

Vendor	Package	Requirements	Price	Circle
Applied Data Research (201) 874-9000	ADR/Librarian	IBM 370, 43XX, 30XX, and PCMs IBM 4321, 4331, 370/115, /125, /135, /138, and PCMs	\$25,000/OS \$20,000/DOS \$15,200	536
Cincom Syst. (513) 662-2300	LMS-11	IBM 360 and up	\$22,500	537
Computer Software Unltd. (901) 754-8332	Marian	IBM 370 and 43XX	\$9,000	538
ESI (904) 224-5182	Lionl	Burroughs large and medium mainframes	\$10,000 to \$15,000	539
Goal Syst. Int'l. (614) 888-1775	Flee/XP	IBM 370, 43XX, and 30XX	\$5,040	540
Mathematica (609) 799-2600	Titan	IBM and PCMs under DOS/VSE	\$12,000	541
Pansophic Syst. (312) 986-6000	Panvalet	IBM 360, 370, 43XX, and 30XX	\$10,000 to \$15,000	542
	Panexec	IBM 370, 43XX, 30XX, and PCMs	\$20,000 to \$30,000	
Phoenix Computer (213) 827-4500	Condor/Camlib	IBM 360, 370, 43XX, and 30XX	\$19,500 to \$24,500	543
Softool (805) 964-0560	CCC	IBM 370, 43XX, and 30XX; Data General; DEC VAX; Gould SEL 32; HP 9000; and Honeywell 6000, Level 66, and DPS 8	\$5,045 to \$30,000	544
Software Corp. of America (703) 471-1545	EasyProclib	Any IBM under OS	\$6,000	545
VM Software (703) 821-6886	VMLib	Any system running VM	\$4,500	546



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OFFICE AUTOMATION

Security and the automated office

You probably don't understand the extent of your office's vulnerability to data thieves. Office automation brings with it higher productivity, but it also removes many of the former obstacles to purloining data. Moreover, it's not only easier to swipe information than before, it's also easier for thieves to escape without a trace.

There's nothing new about security exposure due to computerization. Experts have been advising data-processing professionals for years to implement passwords, access control, and backup systems. Although many of the large-scale computer systems may not be protected as well as they should and could be, MIS/dp departments are well aware of the risks involved, and they've been working to reduce the risk of theft and data loss.

Managers of automated offices don't necessarily share the same awareness of data vulnerability. "Just the opposite is true in the automated office," says Gerald I. Isaacson, director of the Computer Security Institute's Educational Resource Center in Boston. "As word processors and personal computers have multiplied, an entirely new group of users, few of whom have been exposed to the vulnerability of information stored in databases, has arisen. Worst of all, senior executives aren't aware of their organizations' exposure."

At the top, this new group includes managers and executives who have computing capabilities at their desks. It also takes in clericals and support staff who have access to networked microcomputers and word processors.

Is sensitive information really stored in such obvious "hiding places?" Absolutely, says Isaacson. You might find the minutes of the last board of directors meeting in an all-too-accessible place. The corpora-

tion's five-year capital-expenditure plans, labor-contract negotiations, or even employee salary and benefits information might also be, in effect, sitting in the open.

In the automated office, this information is likely to be stored on a floppy disk. In an unprotected office-automation network, any employee can pull up information to the screen. "Information that once was typed, put in a sealed envelope, and carried by hand to a safe place can now be broadcast to anyone on the network," says Isaacson.

Raising awareness

According to Isaacson, corporations must "go back to the beginning" and start all over again. First, managers should initiate awareness programs to help the new users understand the dangers of leaving data exposed. Security is a people problem. If employees don't know what is expected of them, they can't possibly comply with corporate wishes.

The second step is to determine the extent of your organization's exposure by compiling an inventory of

automated-office machines. "If you hope to protect the data stored on these machines, you'll first have to find out where the machines are located. Then you can determine which data are on the machines and how they're being utilized."

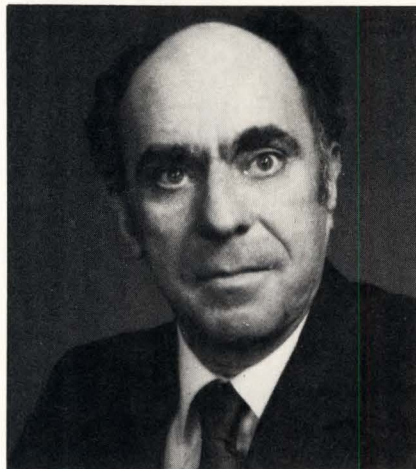
Widespread distribution

Even if a corporation resolves to gain control of its office machines and sensitive data, maintaining security is not an easy task. How can corporations ensure data will be protected? In fact, if office-automation equipment is distributed throughout an organization, there is no practical way to implement central control. The alternative is to give each department manager responsibility for maintaining security.

Holding each department manager accountable for data security is the most realistic way for corporate management to exert meaningful influence on data security in the office. Rather than hand down dictates that restrict usage of the machines, top management should promulgate general standards on equipment utilization and managerial responsibilities.

Of course, this collaborative policy requires top management to provide the tools managers and users will need to maintain security. You might provide security software for personal computers that limits access to sensitive data to only those authorized to see them. Several vendors can provide devices that fasten machines to desks in much the same way the typewriters are bolted to tables. Also, locked cases are available for diskette storage.

For a brochure on this subject, write to the Computer Security Institute, 43 Boston Post Rd., Northboro, MA 01523. Enclose a stamped, self-addressed Number 10 envelope. □



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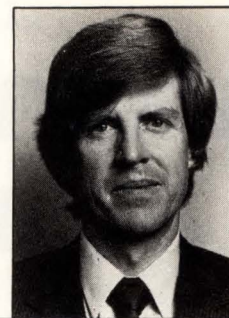
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by James D. MaCamant and Michael Murphy



FOLLOWING THE LEADERS

Apple is reclaiming the limelight

The success IBM has enjoyed with its Personal Computer and the extensive media buildup of the new PCjr home computer raised doubts about Apple Computer's ability to compete. Some observers have even questioned Apple's ability to survive in a market it helped to create.

The doubters are wrong. Apple is not only a competitor for Big Blue to reckon with now, it also has strengthened its long-term position with four strategies during the last six months. Each helped bolster Apple's sagging position as a leader of personal-computing technology and marketing, and took advantage of IBM's weaknesses in those arenas.

- Apple has markedly improved its

relationship with dealers.

- Apple's product line has been intelligently repositioned.

- With the new Macintosh computer, Apple has reasserted its technological leadership.

- John Scully, Apple's new president, has improved morale and internal focus, while retaining Apple's unique corporate culture.

These accomplishments improve Apple's competitive position and outlook for the future. This year, Apple will use its excellent reputation as the leading personal-computer manufacturer and its ample resources (including more than \$150 million in cash) to regain the initiative in the marketplace. A closer look at Apple's four self-improvement strategies re-

veals why it will regain the spotlight.

During the second half of last year, Apple began an intensive program to improve its relationships with dealers. During the first part of the year, failure to support dealers adequately, coupled with the growing popularity of the IBM PC, caused Apple to lose its status as the preferred supplier in many outlets. As IBM became the apple of dealers' eyes, the IBM PC gained even more momentum.

Apple's move to repair relations with dealers was well-timed. At about the same time, IBM's honeymoon with personal-computer dealers had begun to sour as the IBM direct-sales force emerged as a competitor to independent dealers. Independents complained about the price discounts being offered to IBM sales representatives, who could pass them along to their customers. IBM's reps also had first crack at the limited supplies of IBM PCs, and most dealers were unable to get firm delivery schedules for large orders from IBM. When IBM announced that the new 3270 Personal Computer and the Personal Computer XT/370 would not be sold through independent dealers, the message to dealers was made all too clear: Don't count on IBM.

Meanwhile, Scully and other top Apple executives were visiting dealers around the country, assuring them that Apple recognized the importance of its dealer network to its long-term success. The renewed interest and concern at Apple reinforced the perception among dealers that IBM was unreliable. (Continued)

Apple vs. IBM

System	Price point	Apple entry	IBM entry
Business multi-user, multi-tasking	\$12,000 and up	Applenet with Lisa, Macintosh	Popcorn—in July 1984?
Business single-user, high-end	\$8,000	Lisa	PC XT with VisiOn
Business single-user low-end	\$4,000	Macintosh	PC
Small business or home, high-end	\$2,000	Apple IIe with windows	PCjr II
Home	\$1,300	Apple IIe	PCjr I

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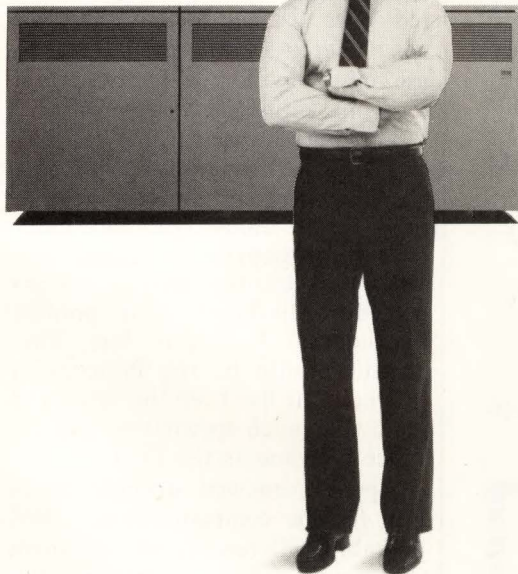
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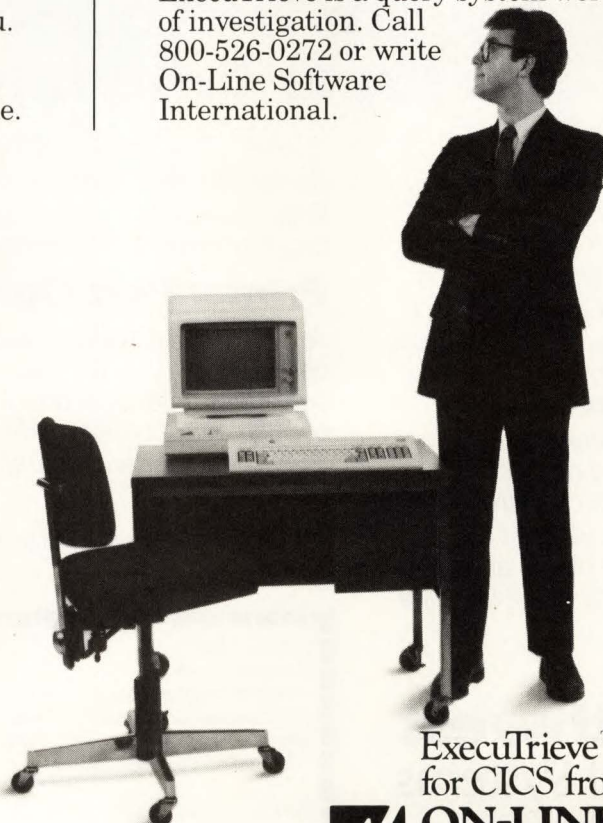
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FOLLOWING THE LEADERS

(Continued from page 66)

The accompanying table outlines our perception of how IBM and Apple have positioned their competing products. Before the introduction of Macintosh, IBM dominated the biggest single segment of the desk-top personal-computer market. But Apple's product strategy will enable it to compete with Big Blue as an equal.

Increasingly, success in personal computers is a result of good marketing rather than flashy technology. However, technology—and user perceptions of it—can't be discounted. Apple has regained its image of being the leader in personal-computer technology. The introduction of Lisa a little more than a year ago was the first evidence of Apple's advanced technology, but the introduction of Macintosh is even more significant.

Advanced technology, in today's market, means computers that are easy to use. The next major expansion of the personal-computer market will be so-called user-friendly personal computers. The pool of users who are willing to undergo time-consuming training is quickly being exhausted. With Lisa and Macintosh, Apple has achieved a clear lead in easy-to-use computers. This will be important to its marketing success.

The other important new technology is networking, and Apple is in a good position to take advantage of it. Lisa and Macintosh both have built-in communications capabilities. IBM, on the other hand, is not expected to introduce a similar product for months, possibly in July. That product could be the Popcorn, a product that has been the subject of almost as much speculation and advance ballyhoo as the PCjr.

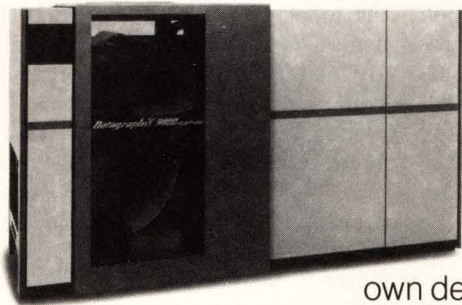
Apple's renewed strength bodes well for the computer-maker. IBM probably will remain the dominant supplier of personal computers, but Apple should be a comfortable, profitable No. 2. ☐

James D. MaCamant and Michael Murphy are the editors of the California Technology Stock Letter. To subscribe, call (415) 982-0125.

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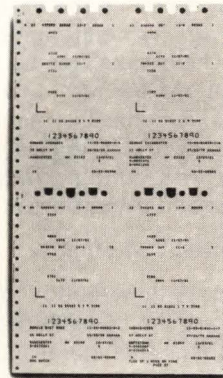
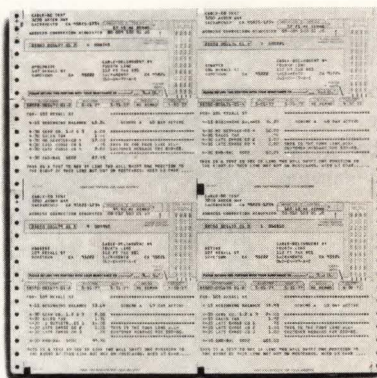
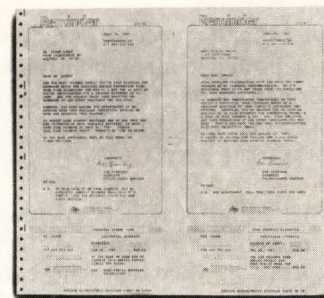
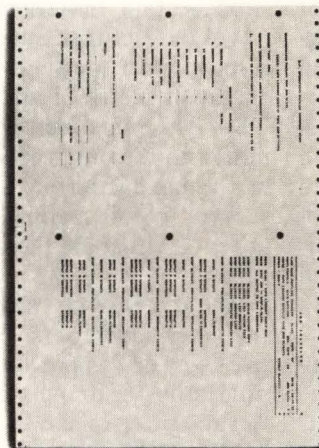
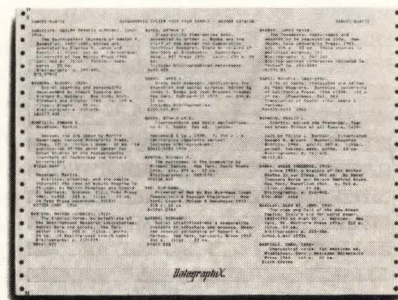
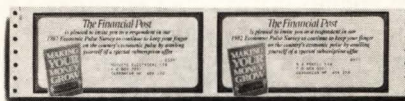
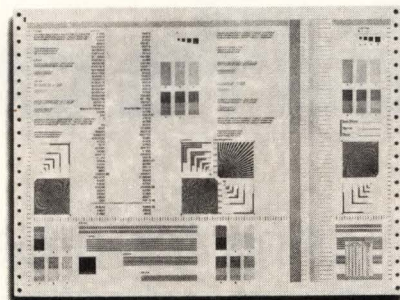
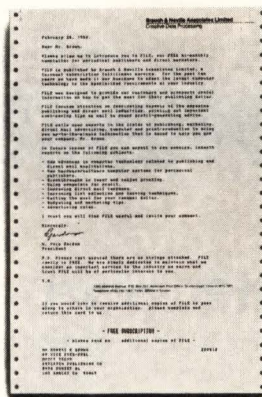
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CIRCLE 47



by John Seaman, Data Communications Editor

DATA COMMUNICATIONS

Waiting for a better SNA

SNA may be a dominant networking protocol, but it is far from perfect. When the local telephone company installs a new business-phone system, it doesn't have to bring down the nationwide AT&T network during the installation. The public data networks operated by GTE Telenet and Tymnet also can be "dynamically reconfigured," that is, altered or expanded while they are up and running.

But networks based on IBM's System Network Architecture can't be dynamically reconfigured, and that's a problem for a multitude of user organizations. IBM has traditionally sold host mainframe-based networks that aren't easy to reconfigure.

IBM's traditional network design locks users into a centralized, "tree," configuration. Because these networks are centered on a single point, breaks in any of the branches bring down *all* terminals and equipment below the break. Tree networks offer few options for rerouting communications. Obviously, managers with these networks often have problems coping with certain kinds of service failures and alterations.

The "mesh" alternative

Independent-node "mesh" networks are the best alternative for organizations that can install them. As distributed data processing (ddp) has become cost-effective, several vendors, among them AT&T, GTE Telenet, and Tymnet, have developed networks that break down management functions into nodes. Unlike SNA networks, intelligence is distributed throughout the network, giv-

ing it greater flexibility.

Consider Tymnet, a packetized public data network. (Tymnet also builds private data networks.) When a user signs onto the network, the Tymnet Network Supervisor automatically surveys the network and maps out a virtual circuit to the desired location. In response to the queries of the Network Supervisor, nodes respond with messages that can be characterized as "I am awake, I am OK." The same messages are transmitted to the other nodes. A portion of the bandwidth on Tymnet is reserved for this supervisory component. Although there are several supervisors, only one is active at any given time. It sends "sleeping pills" to the other supervisors. But if the active Network Supervisor falters, the pills stop, and one of the others "awakens" to take over.



"The new SNA configuration will have IBM's traditional centralized nature, but it will also be distributed."

King, James Martin Assoc.

When active, a Network Supervisor queries adjacent nodes, which in turn query the nodes attached to them, to see if all lines and equipment are operating normally. If a component breaks down, the Network Supervisor routes traffic around it. Thus, Tymnet integrates alternate Network Supervisors, alternate nodes, and alternate routes for message transmissions.

GTE Telenet offers a different approach, says Walter E. Ulrich, a Houston-based consultant. "In Telenet, each node stores information on the topology and status of the other nodes," he says. Switching decisions are made automatically, as each node sends traffic along the best route. "At Node 24, the best route may seem to be through Node 47," says Ulrich. "At Node 47, another split-second decision is made to pass the message on to Node 53, and so on, closer and closer to the destination."

Supervisory components play a less-important role in Telenet than they do in Tymnet, he says, and in that sense, Telenet is more "democratic." However, both public data networks based on the independent-node structure, and the similar private offerings of each vendor, handle dynamic reconfiguration equally well, says Ulrich.

Pressure on IBM

Alternatives are fine for organizations in a position to take advantage of them. However, 25 percent to 30 percent of the corporations on the Fortune 1,300 list are committed to SNA. Many more organizations have invested in IBM's network scheme. What can they look forward to?

Ulrich and other consultants ex-

(Continued on page 74)

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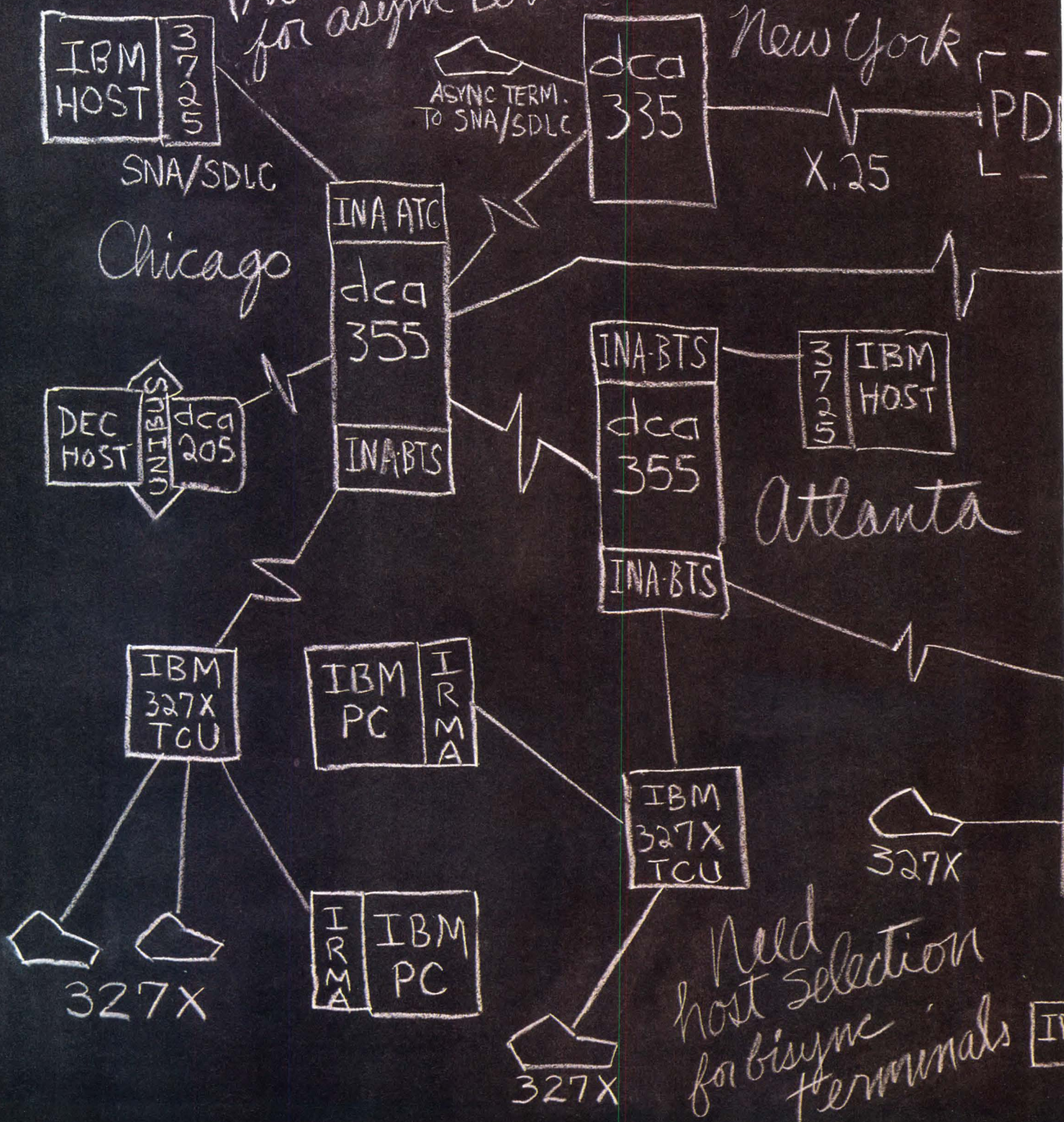
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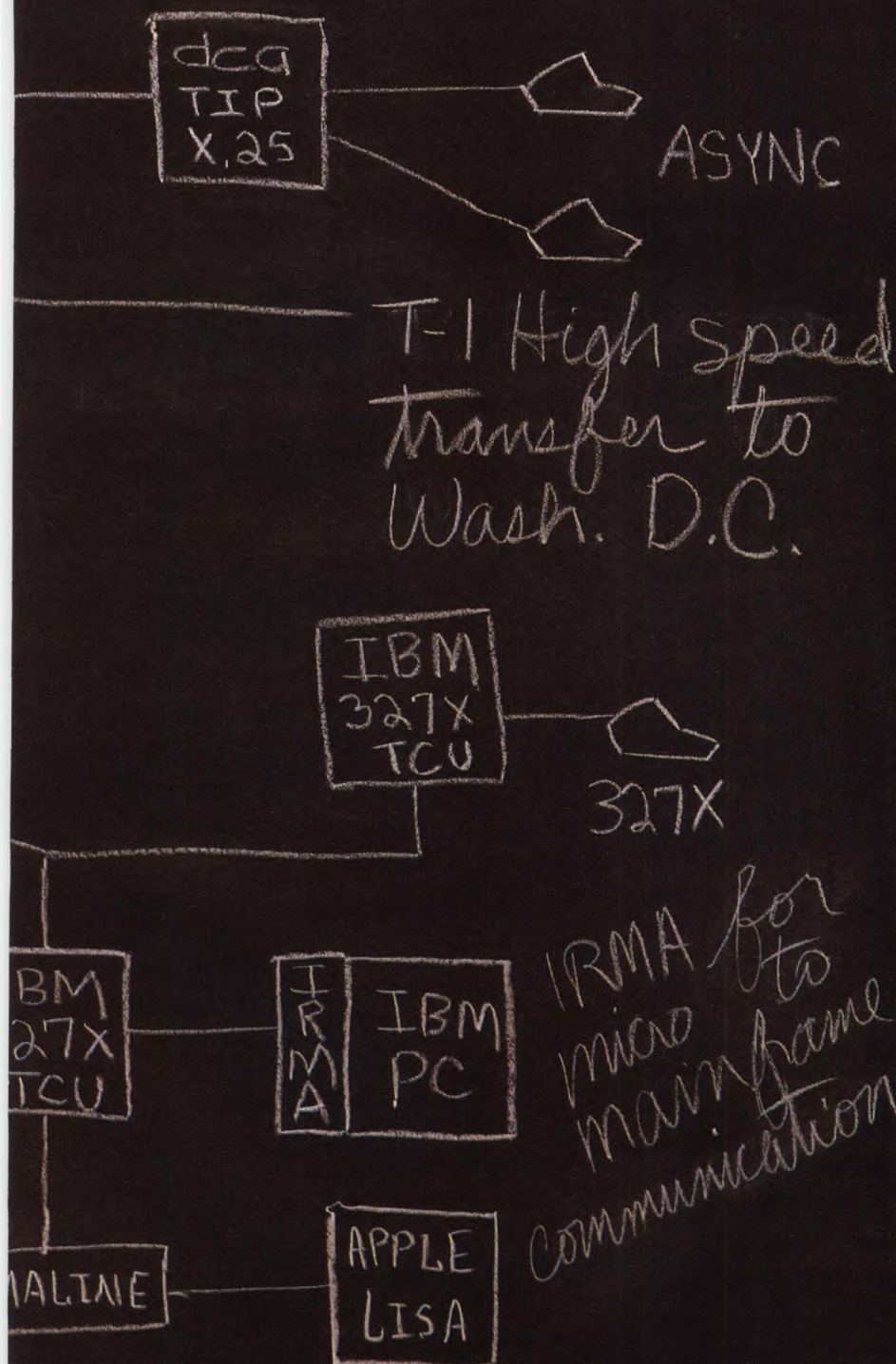
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CIRCLE 49



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DATA COMMUNICATIONS

(Continued from page 70)

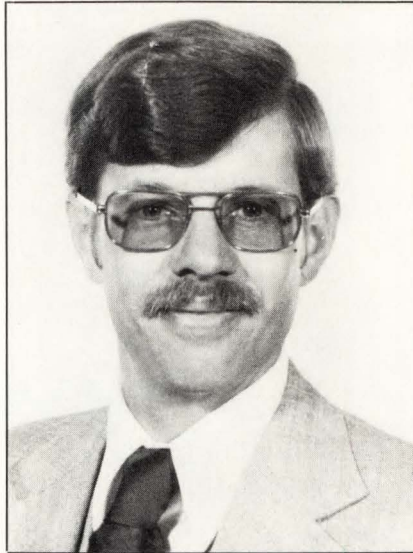
pect IBM to respond to the demands for a more flexible SNA, but all in good time. SNA probably will evolve to become more and more dynamically reconfigurable. That is, the failure of one point on the network will affect only users directly connected to that point. Other users will continue to work without interruption.

In the meantime, SNA requires network managers to include likely future expansions in their own current network plans. But predictions of growth patterns often are shattered by changing circumstances. If changes and demands for expansion come off as expected, managers can dynamically reconfigure an SNA network. If growth is unexpected, managers must reload the network-control parameters. The IBM Network Control Program resides in the system's 3705 or 3725 front-end processor. Just one front end and one host (single or tandem) have primary responsibility for the network, and failure of either cripples the network. Coupled with the inherent limitations of tree-network configurations, these drawbacks make for some big managerial headaches.

Shell Oil Corp., Houston, doesn't have major problems, but it brings its SNA system down for about 30 minutes every month to handle network-expansion updates to VTAM, NCP, and IMS. The software revisions are written beforehand, says Mel M. Romine, senior systems analyst. And since the procedure is routine, many of the changes are mass-produced, so to speak, to save programmer time.

"We've made a big commitment to SNA because our network is mostly based on IBM mainframes and terminals—and we'll stick with it," says Romine. "But, of course, we're looking for regular improvements, particularly in the capability to perform dynamic reconfigurations."

Shell's network, which embraces IBM 3033, 3081, and 3083 mainframes and thousands of IBM terminals, is a little unusual at the front end. Rather than use an IBM 3705,



Consultant Walter E. Ulrich expects IBM to respond to demands for a more flexible SNA, but all in good time.

Shell deployed an NCR Comten for network control. Shell went with the Comten because it handled the oil producer's emulation chores best. Much of Shell's software was written for the old IBM 2701/2703 communications controllers, and Shell wanted a compatible front end that efficiently integrated the NCP and the emulation packages. An IBM 3705 can accomplish these chores, but not as efficiently as the Comten.

Changing times and products

How did IBM get into the SNA mess? In the good old days of pre-ddp, IBM's mainframe orientation prompted it to build mainframe-based, centralized networks. The idea made good marketing sense.

As times change, IBM probably will too. Big Blue faces big challenges, however. Not only does SNA have some drawbacks, but IBM offers only cumbersome links between its products and networks made by other vendors. Mixed networks are becoming the rule for many organizations, but IBM's X.25 interface, for instance, is difficult at best. Of course, some IBM loyalists will stick with SNA because of the perceived advantages of a "single solution"

from Big Blue. However, even these managers will soon be pressing IBM for better, more flexible products.

IBM watchers have all sorts of ideas about where Big Blue is, and should be, headed on the SNA question. John King, a Carmel, CA-based consultant now affiliated with James Martin Associates, believes SNA-based networks are inherently efficient in driving a network—the technology gets into trouble only when something goes wrong or expansion is called for.

When an SNA network must be changed, says King, all of the revised system software must be generated first. Managers must then bring down the network, load the network processors with the new software, and restart operations. "The reloading procedure can be carried out in 10 minutes on a Saturday night," says King. "It's not a big problem in terms of machine time, but the human effort required in advance is considerable. IBM must be looking for a better way."

One of the big problems of SNA networks is that they require so many disparate software systems, each of which is resident in a different location. The NCP residing in the front-end processor is one such package; Virtual Telecommunications Access Method (VTAM) communications utility, residing in the host, is another. The Time Sharing Option (TSO) and the Information Management System (IMS, IBM's database management system) may also figure into the picture. Each must be separately updated in the event of network changes.

King believes IBM will introduce a variety of improvements during the next two years. Naturally, user organizations will have to invest in new equipment and software to get the "new SNA."

"The new SNA configuration will have IBM's traditional centralized nature," he asserts. "But it will also be distributed; there will be nodal processors ready to step in if anything goes wrong." (Continued on page 180)

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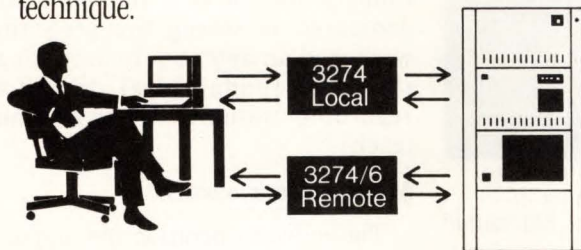
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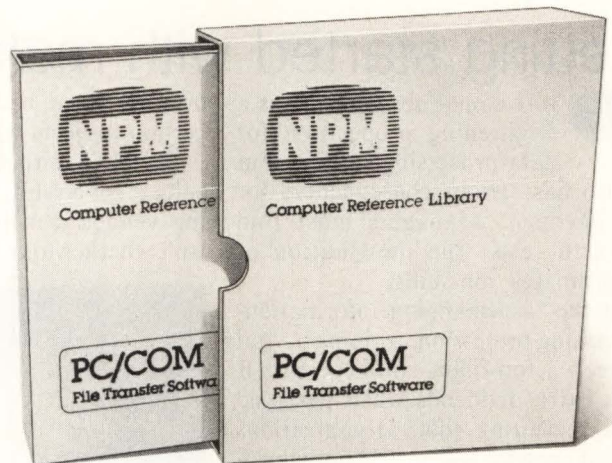


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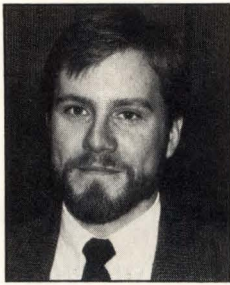
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by David Roman, Staff Writer

TRAINING

Getting started with management's help

Professional obsolescence is a frightening proposition for data-processing staffers, but it also has serious consequences for management. Managers must find ways to resist the devaluation of subordinates' job skills.

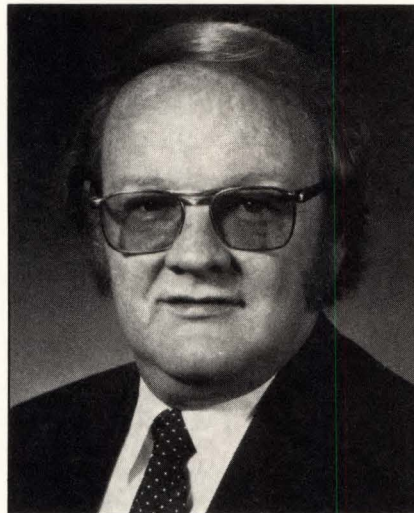
In the fast-changing information-processing profession, training is vital to keep a top-flight staff current. It pays extra dividends when parlayed as a recruiting tool: Organizations with successful in-house training programs can use them to attract top talent, says Jarlath O'Neil-Dunne, partner in charge of training at Coopers & Lybrand, the New York-based Big Eight accounting firm. O'Neil-Dunne believes that a strong commitment to training attracts—and a weak commitment repels—top talent.

Some organizations dodge the question of a commitment to training by specifying that all new employees must possess the skills necessary to work on a particular project or system. This practice may provide the necessary talent without requiring the company to invest in training, but it has a big drawback. It forces a company to hire new batches of ready-made workers every few years, or whenever a new project is started. This frustrates the goal of staff stability and continuity.

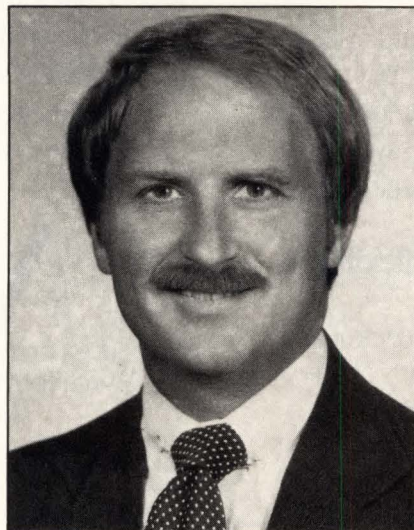
Is a policy that virtually guarantees high turnover a reasonable alternative to training? Chester Delaney, vice president and manager of systems training at Chase Manhattan Bank in New York, believes alternatives don't exist. "You can't run a business that uses computers today without doing a lot of training," he says. "You can cut off money to a training division, but training won't stop. It starts popping up all

over the place, because you can't run certain projects without it."

David Shapiro, senior training consultant for SysEd, a New York training vendor, concurs. "The question isn't whether to train or not," he says.



"You can't run a business that uses computers without doing a lot of training." *Delaney, Chase Manhattan*



"The main reason you train is to promote the plans and profitability of the company." *Tilton, Goal Systems*

"There's no way around it. Companies should be getting a very good handle on exactly what their training needs are, and what approach they should take."

MIS/dp managers play a variety of roles when it comes to training. You may be asked to put together a training program. If your organization's training program is outdated, you could take the lead in revamping it. Or, if your organization doesn't provide training at all, you might put together a proposal and sell it to the brass. In each case, getting started requires the endorsement—and preferably the active support—of top management, the guidance of a training director or a training staff dedicated to seeing the program work, and an approach to answering the most fundamental question regarding training: What do you teach?

Management's answer

The active cooperation and support of management is needed to set training goals. "Most executives and managers will say they are *for* training, but being committed is not enough. They need to be involved," says Steven Tilton, north central regional manager for Goal Systems International Inc. (Columbus, OH), a vendor of software and computer-based training (CBT) systems. "The main reason [for training] is to promote the plans and profitability of the company," he says, and top management is in the best position to define these plans. "The ancillary goal is to make employees feel good about the company, but to be Machiavellian about it, you train people so they are more productive for the company."

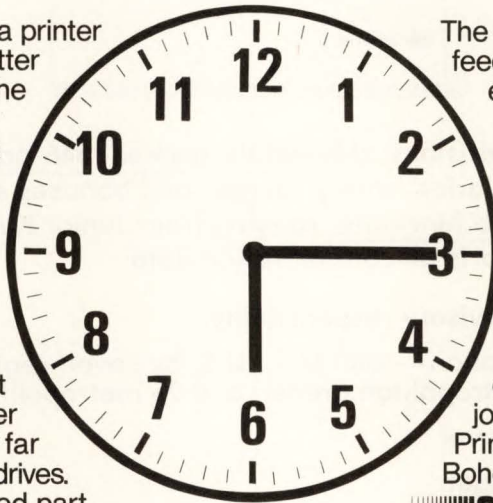
Departmental managers must also

(Continued on page 222)

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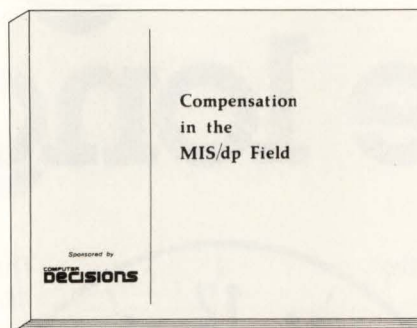
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APPLICATION

More than number crunching

An insurance carrier that handles 10,000 business transactions a day and processes approximately 100,000 new claims a year needs more than an ordinary office computer. The not-so-ordinary computer that National Loss Control Service Corp. (NATLSCO) selected was a Harris 800 supermini.

"We needed number-crunching capabilities as well as the ability to support a large number of terminals simultaneously," states Jack Tieman, data-system manager. "Sometimes we have as many as three dozen terminals going at the same time. We also needed a machine that could process very large arrays, mainly for our finite-element-processing application."

NATLSCO, a Kemper Corp. subsidiary in Long Grove, IL, extends to Kemper-insured and self-insured companies claims-management and loss-control services, including information on workers'-compensation, automobile, product, and general-liability claims. Most of its clients are Fortune 1,000 companies that have more than 500 employees.

Sixty percent of NATLSCO's data processing is devoted to claims processing. Its database comprises about 300,000 claims, which are all processed at least once a month. There is an average of three claimants per claim, or about 900,000 claimant records that need to be maintained. Data on some accounts go back as far as 1970. In addition, information on

claims keeps compounding.

Knowing how heavy the workload is, it's hard to believe that, until seven years ago, NATLSCO relied solely on Kemper's staff and facilities for its data-processing needs. But it wasn't until 1976 that doing so became impractical. That was when the subsidiary began a search for its own computer. Eventually, the field was narrowed to

whether to purchase a high-end mini-computer or move up to a mainframe. The Harris 800 supermini was chosen, for several reasons. First, the dp staff was satisfied with the Harris S-125 and knew what could be expected. (The 800 offered about $2\frac{1}{2}$ times the throughput performance of the S-125.) Second, but just as important, was the need to save time. "In order to

find out if an IBM or a Sperry mainframe could actually perform our tasks as well as the Harris," states Tieman, "we would've had to undertake some very labor-intensive software conversion."

"The Harris machines are user-friendly," Tieman continues. "And it's much easier to pick up on the Harris machine's operating system than it is a mainframe operating system." Also, with the Harris 800, there's no need for a full-time operator, as would probably be the case with a mainframe. Finally, mainframes are too expensive. The Harris 800 could meet the company's needs at a much lower

price. It sells for \$500,000.

The Harris 800 system has 512 Kbytes of memory, two 160-Mbyte disk drives, three 675-Mbyte disk drives, two streaming tapes, twelve interactive terminals, and five Printonix printers.

NATLSCO has found Harris's sales and support staffs quite helpful. Says Tieman, "We have confidence in Harris's commitment to new improvements." *Circle 562*



An employee at National Loss Control Service Corp., a Long Grove, IL-based subsidiary of Kemper Corp., inserts a tape cartridge into the carrier's Harris 800 supermini.

three machines: the Harris S-125, the Digital Equipment VAX 780, and the Hewlett-Packard 3000 series.

The Harris S-125 was selected for its price/performance ratio and Harris's virtual operating system. This was the beginning of NATLSCO's own data-processing department.

Over the years, NATLSCO's claims volume grew, and the need for a more powerful system than the S-125 became evident. The only question was



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CIRCLE 52

*When your back is
against the wall,
and you must
satisfy an angry,
over-demanding,
or otherwise
unreasonable boss,
lying may seem
the only way out.
But how much can
a lie really help?
And how much
can it hurt?*

*by Martin Lasden,
Western Editor*





The Check Is In The Mail The Fine Art Of Corporate Lying

relationships, most of us would have a tough time getting through the day. But what is it costing us? Sleep? Long-term credibility? Self-respect?

"Everyone depends on deception to get out of a scrape, to save face, to avoid hurting the feelings of others," writes philosopher Sissela Bok in her book, *Lying: Moral Choice in Public Life* (Pantheon Books, 1978). "Some use it much more consciously to manipulate and gain ascendancy. Yet all are intimately aware of the threat lies can pose, the suffering they can bring. . . . Even the devils themselves, as Samuel Johnson said, do not lie to one another, since the society of Hell could not subsist without truth any more than others." How, then, in the ambience of so much deception, do we subsist? How are we able to trust one another long enough to get our jobs done?

To answer that question, consider what goes on within your own MIS/dp department. It's a good place to look—for a couple of reasons. First, as the years have gone by, those whom the department serves have become more dependent on it. From payroll to decision support, from batch processing to artificial intelligence, the power of the microchip is creating increasingly stronger ties between those who use the technology and those who provide it. When dp talks, non-dp managers and professionals need not only to listen; they need to believe as well.

But here's the rub: Over the years, the dp department's reputation for dependability has been less than terrific. To users, the jargon is strange, the technology is formidable, and there are a lot of systems that just haven't worked out very well, delivering too little, too late, if at all. Consequently, MIS/dp has not only been the poor stepchild of many corporate families, but also a favorite scapegoat. That, too, makes dp the ideal

There's an old Czech proverb that goes: "Better a lie that heals than a truth that wounds." But let's just suppose for a moment that, starting today, you can deceive no more. No more exaggerations, no more euphemisms, no more evasions, no more lies. Just think about that.

Remember all the times you told your boss you agreed with him when you really didn't? Remember all the times you told your boss you would get your work done on time when, in fact, you knew you couldn't? And remember all the times you told your boss you really didn't have the information he was looking for when, in fact, you did, but didn't want *him* to have it? Well, imagine, if you will, that if you tell just one more lie, concoct just one more alibi, or get caught up in just one more deception, a bolt of lightning will strike you dead. How would it be?

Lies are a big part of our professional—as well as our personal—lives, as evidenced by how completely oblivious we are to them. The cycle of deception starts first thing in the morning, when we wish our most hated rivals a good day, and it goes on from there. Without the trivial (and not-so-trivial) deceptions that have come to characterize our working

Corporate Lying

(Continued from page 83)

focus for a discussion on lying, because it's when you're in a pinch that lying becomes most tempting. So how much does lying help? How much does it hurt? And how much does it confuse, making reasonable assessments impossible?

Born again

In 1968, Stephen Ferreira lied on his resume to get a job as a programmer. He lied by giving the impression that he was a lot more experienced than he actually was. "When I got the job, I spent a lot of sleepless nights cramming to gain

The cycle of deception starts first thing in the morning, when we wish our most hated rivals a good day.

knowledge, to learn what was going on," he remembers.

Ferreira eventually did catch on and, in fact, did quite well. Did the lie pay off? Yes, he says, it did. But he is extremely uncomfortable with that thought. And no wonder. Two years ago, Ferreira became a born-again Christian. Now faith—rather than fear, convenience, or what might be called "common sense"—is the basis for his actions. And he believes that lying is a mortal sin. In fact, he goes so far as to say that lying is as serious a sin as murder.

That is the perspective that Ferreira, currently a dp manager at Felt-on Brush Inc., Manchester, NH, takes to work everyday. Does he tell the truth no matter what? "Yes," he answers, "no matter what."

This means, for example, that when Ferreira bids for equipment, he refuses to employ certain bargaining ploys that might get his employer a better deal: like telling one vendor that he's negotiating with another who's eager to bargain, even though that isn't true.

Ferreira admits that before his conversion, he used that tactic. Now,

however, he looks upon such maneuvering as "dirty dealing."

How can a man taking that sort of position survive in the business world? "Only by the grace of God," Ferreira answers. "Only by the grace of God."

Most of us, of course, have not taken that stand. This is not to say that we are compulsive liars. Most of us are too pragmatic to embrace either extreme. Instead, we perform these internalized cost-benefit analyses in our brains. We weigh the costs, assess the risks, and then contemplate the potential gains. And then we either tell the truth, or we don't. The problem is, though, that time is often not on our side. Issues that we might otherwise ponder for weeks must often be decided on within the day, hour, or minute. In this respect, compulsive liars and born-again Christians both have it easy. They *always* know what to do. The rest of us aren't so fortunate.

Getting them over the hump

"If I always had to tell the truth, I'd be the most frustrated individual in dp. I'd never get anything done!" declares Larry Peek, the dp manager at White Villa Grocers Inc., a food distributor in Dayton, OH. For Peek, trying to keep users friendly would be

the biggest challenge. "There's a lot of fear of the unknown," he observes. "And I don't want to add to that fear by telling users what they don't need to know." So Peek is careful. He's careful about what he says and to whom he says it. And if it helps users get over their fears, he's not above stretching the truth now and again.

For example, when Peek was installing a new database management system about which prospective users were apprehensive, he made the system sound a little easier to use than it really was. As he puts it: "If there was a button you had to push three times to accomplish a certain task, I'd give the users the impression that they'd need to push it only once." Such truth stretching is necessary, Peek maintains, because people are very fearful of the technology. "You'd be surprised how many smart people are still terrified of terminals," he adds.

Peek believes the end justifies the means: that the systems he builds will be of benefit; that they will ultimately make users more productive and knowledgeable; and that all he has to do is get them over the hump. That is the premise upon which he tells—or does not tell—the truth. And that is the premise upon which he gets his job done. "Isn't that what good management is all about?" he asks. "Getting the job done? Pulling the right strings? Everybody has strings to pull."

Is it, however, the role of an MIS/dp manager to "sell" systems, as a used-car salesman might "sell" used cars? Ask John Gibbons. Before going into data processing some 20 years ago, Gibbons sold used cars for a living. Reflecting on that experience, he recalls: "I was not comfortable putting things over on people. And it seems to me that the underdog often does get hurt. I got into trouble with my boss when I sold a car to an elderly woman for the lowest possible price. Her car had just been stolen, and I felt sorry for her. But the boss got angry; he thought we could have made more money. . . . I suppose he was right." (Continued)



Daniel Nolan, director of MIS at Heuristic Developments Inc., an Annandale, VA-based consultancy, says he "prevaricates." He defines prevarication as "the prelude to an ultimate truth."

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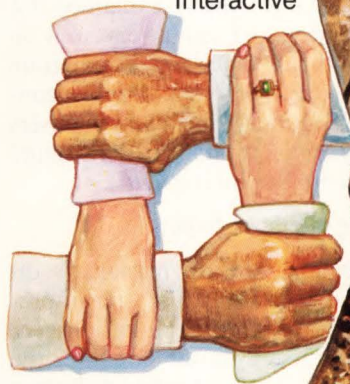


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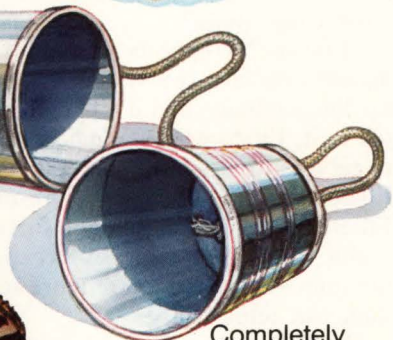
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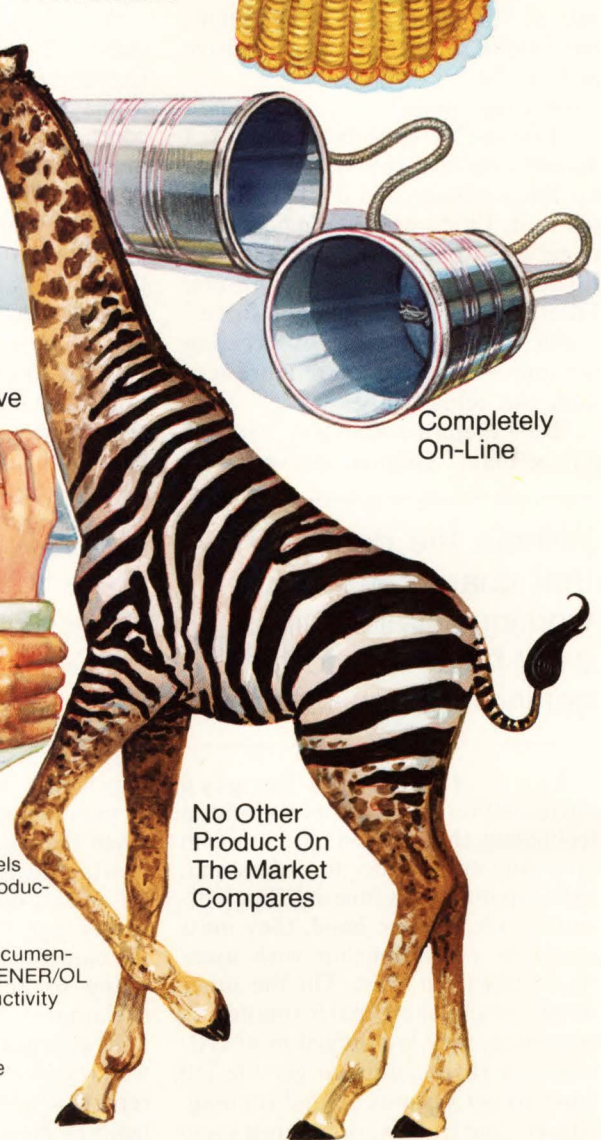


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CIRCLE 53

Corporate Lying

(Continued from page 84)

Gibbons did not last long in *that* job. But as MIS manager at Quantronix Inc., a Long Island, NY-based laser-medical-equipment manufacturer, Gibbons hasn't exactly left sales altogether. "To motivate users and keep their interest, I might oversell a system," he admits. "Say a potential user asks whether a system will do 'X.' If I need that person's commitment, I'm very reluctant to say 'no.' I'd rather say: 'I don't know, but I think so.' I try to be as positive as I can be."

Isn't that lying?

"Listen," Gibbons says, "if I honestly believe the system is good for the company, and if I'm committed to it, I'll do whatever's necessary to get it out there. That doesn't mean I'll out-and-out lie. But if I'm unsure, I'll err on the side of being positive."

But aren't you lying by creating the impression that you're more sure than you actually are?

"Isn't there a softer way you can phrase that?" Gibbons answers.

Without the deceptions that characterize most working relationships, we'd have a hard time getting through the day.

As intermediaries between bottom-line-oriented users and a technology that is often hard to warm up to and even harder to understand, MIS/dp managers face a difficult dilemma. On the one hand, they must establish a relationship with users that's based on trust. On the other hand, when their performance is evaluated, they are judged most critically on their ability to get the job done; to get systems up and running. Clearly, the truth works against them if its effect is to intimidate, overwhelm, or confuse those who ultimately will benefit. As Gibbons puts it: "I don't want the users walking away unsure or scared." Of course, a distinction must be made between simplifying the truth and distorting it.



But in real life, the distinction is often fuzzy.

At a large east-coast food processor, dp manager Jonathan Davies (a pseudonym) admits that if he were to play back the simplifications he's concocted over the years for users, many of his technical people couldn't figure out what he was talking about. Like Peek and Gibbons, Davies believes broad explanations come with the territory. He warns, though, of a possible trap. "You can simplify so much," he says, "that users will expect you to complete the project in no time. And once you've explained it a certain way, you can't very well go back and say that your explanation wasn't accurate." So, Davies concludes, you must go back to the users and make your simplifications sound more complex. Interesting.

Making the boss happy

Of course, the dp manager's dilemma is more than a matter of providing reasonable explanations for users. It's also a matter of making the boss happy. And as Frederick Reeves (a pseudonym) notes, there are times when the boss just isn't interested in hearing the truth. Reeves, who works for an east-coast city government, respects that. "If you keep saying that the emperor has no clothes on, you're going to get into hot water!" he exclaims.

Reeves is a programming manager who reports to an MIS manager who reports to a bureau chief. As such, he believes his statement holds true especially with respect to deadlines. "If your boss tells his boss that he can get a particular project done in six months, he doesn't want to hear from you that it's going to take a year." So, rather than make his boss unhappy, Reeves will tell him exactly what he

wants to hear. "I'll get the project done in six months," he'll say.

But Reeves will be lying. He'll know there's no way in hell he'll be able to get that project done on time, within budget. But he'll say that he can because, for the moment, everyone will be happy. His boss will be happy, his boss' boss will be happy, and he'll be happy when he gets patted on the back for being a good team player. And it will pay off in the long run, Reeves maintains, because when the project starts to fall behind schedule, as it inevitably will, his happy bosses will be receptive to the documented problems he shows them. More time will be given and more resources dedicated, but through it

Lying is such a harsh word that, instead, we prefer to say we exaggerate or bend the truth *just a bit*.

all, Reeves will continue to be perceived as a team player. "I don't like to lie," Reeves says, "but I have a family to support, and I want to get ahead. And many times, getting ahead has little to do with performance. It has to do with making the boss happy."

Ed Krayner, the dp director at Charter Oil Co., Jacksonville, FL, is of the same mind. "You don't necessarily want to lie," he says, "but bending the truth a little probably does make good business sense. If you say 'no' to an unreasonable deadline, you can create for yourself an unbearable situation, and you may not last. I'm not suggesting you lie to users, but they expect a positive answer, and you must be positive. . . . There's a way to form responses to a question that's not totally truthful, and may not be lying either. . . . I guess whatever you call it—lying, bending the truth, being diplomatic—you sometimes have to deal with people in ways that are not as aboveboard as

(Continued on page 90)

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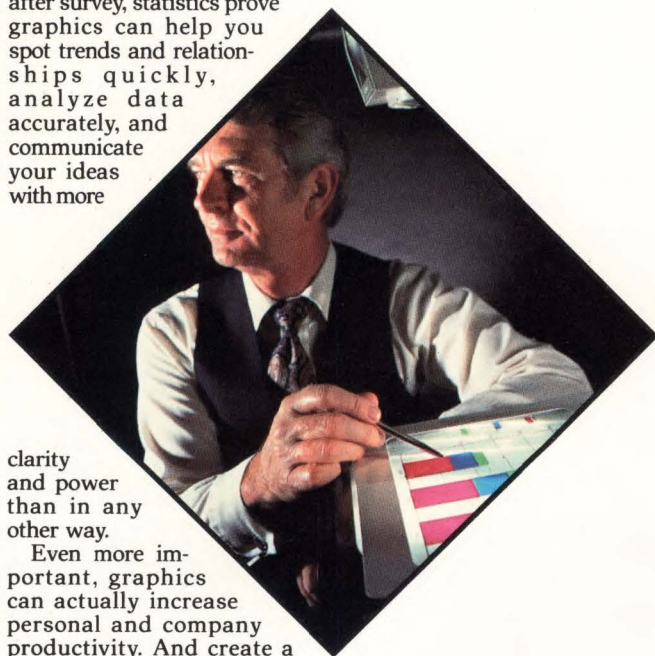
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Corporate Lying

(Continued from page 86)

you would like."

Lying is such a harsh word, and being called a liar is such a serious-sounding accusation. So, rather than say we lie, we say we exaggerate, equivocate, or bend the truth *just a bit*. When Henry Kissinger tried to prevent news of the bombing of Cambodia from reaching the American people, he never said he was "lying." He said he was doing "double-entry bookkeeping."

Daniel Nolan, the director of MIS at Heuristic Developments Inc., an Annandale, VA-based consultancy, says he doesn't lie. He says he "prevaricates." Here's how *Webster's New Collegiate Dictionary* defines the word:

prevaricate *vi* -cated; -cating [*L praevaricatus*, pp. of *praevaricari* to walk crookedly, fr. *prae-* & *varicus* having the feet spread apart, fr. *varus* bent, knock-kneed; prob. akin to OE *woh* crooked, *L vacillare* to sway, *vagus* wandering]; to deviate from the truth : EQUIVOCATE *syn* see LIE.

When Nolan uses the word, there is an added dimension to his meaning. He defines prevarication as "the prelude to an ultimate truth," and gives an example. Say, during the course of a meeting with users to review the workings of a particular system, somebody mentions a function that's absolutely required, but about which Nolan knows nothing. In that situation, Nolan says, he might prevaricate. This is to say that he might talk about that function as if it were already built. And then, in the dead of night, he would go back to his office and actually build it. A lie—but not really, Nolan says.

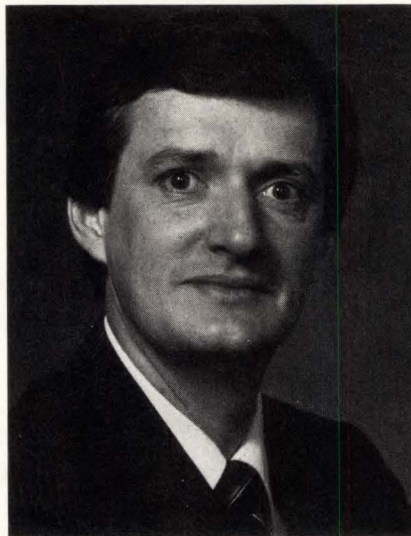
"If I tell them the function hasn't been built yet, I'm going to upset them for no good reason. . . . I could survive without prevaricating," Nolan adds, "but by doing it on occasion, I'm able to take advantage of certain opportunities. So, why not? It's better to get through the hard times quickly than to wind up being stigmatized."

Bearing bad tidings, we are all vulnerable to the bad impressions that

such tidings can bring. And naturally, we're afraid of being thought of as incompetent, inattentive—or, worse—uncaring.

At one southeastern college, this fear was especially acute. At least, that's how Julie Littlefield remembers it—she was the dp manager until she resigned last year. Littlefield recalls, for example, the time her immediate superior counseled her never to use the word "error" around anyone outside the department.

"Our department had this reputation for making mistakes," Littlefield explains. "The director under whom I



"If I always had to tell the truth, I'd be the most frustrated individual in dp. I'd never get anything done!"

Peek, White Villa Grocers

served was a visionary, which meant that a lot of little things got screwed up; and our reputation became sullied. But we did our damndest to be dependable. It was very tempting not to admit to our mistakes. . . .

"You destroy your credibility by making too many mistakes," Littlefield adds. "Everyone makes mistakes at least 20 percent of the time, but if you're standing up and beating your breast about *your* 20 percent, while all the others are downplaying theirs, they're going to think yours is just the tip of the iceberg."

It is this mind-set, no doubt, that set the stage for a frenzy of covert activity one year around Thanksgiv-

ing time. Littlefield's boss inadvertently hit a button that instantaneously wiped out six months' worth of stored data that hadn't been backed up. Rather than admit to the accident, the department prevaricated. "We lied by omission," Littlefield says. "Whenever someone looked in on us, we'd stand around smiling as if everything was fine when, in fact, we were working like hell to fix it. We worked around the clock, five days straight, to reenter the data. Yes, we lied. We lied to be good soldiers."

But why not admit an accident had happened?

"If we told people that we had screwed up, we would have caused concern when we were doing our best to clean it up," Littlefield answers. "Why have people needlessly choking on their turkeys?"

For the convenience of all concerned. Isn't that why so many lies, equivocations, and prevarications pass our lips? There's the dp manager in Chicago who blames the computer for human errors. There's the MIS head in Des Moines who estimates his budget with a built-in fudge factor. And there's the project leader in Los Angeles who denies to his subordinates that layoffs are imminent when they are just around the corner. It's not that these managers mean to harm—quite the contrary. It's just that, at the time, lying seems the easiest, most expedient, most convenient thing to do. But what price are they paying for such convenience?

In her book on lying, Sissela Bok writes: "Any awareness of how lies spread must generate a real sensitivity to the fact that most lies believed to be 'white' are unnecessary, if not downright undesirable. Many are not as harmless as liars take them to be. . . . As a result, those who think to tell white lies should look hard for alternatives. They should see even these lies as links in much wider practices and should know the ways in which those practices can spread."

As Bok points out, the impressions that lies create often can't be kept up



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Corporate Lying

(Continued from page 90)

without constant maintenance. Sir Walter Scott was right on target when he observed: "Oh, what a tangled web we weave, when first we practice to deceive!" and those who are given to guilt trips and/or short-term memories must find the practice of deception a horrible way to live.

But perhaps the biggest, most insidious hazard of lying is alienation from ourselves—when we actually begin to believe the b.s. we're telling everybody, believe that we really can get that project done, that system built, that fault corrected, on time, on budget, without hassle. And that's when we really get into trouble, be-

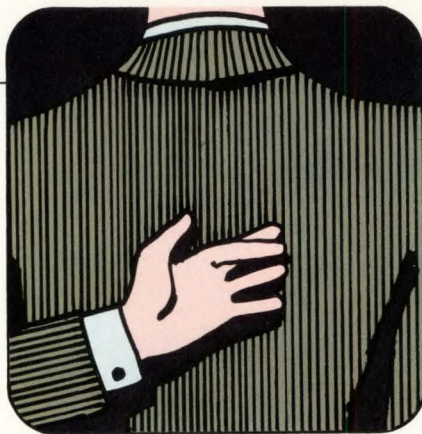
With the world the way it is, it's not always possible, practical, or wise to tell the truth.

cause that's when we don't know what's true anymore. "The biggest hurt is to your self-respect," Frederick Reeves states simply. "You feel as if you've compromised yourself."

It's amazing how candid my sources were about their lies. Virtually all of those interviewed, whether or not they allowed their real names to be used, responded with a lot of interest—if not enthusiasm—to my questions. It was as if, just in being asked the questions, they were being given permission to let their defenses down.

What became painfully obvious, though, was that, with the world as it is, it's not always possible, practical, or wise to tell the truth. There will always be bosses who need their "yes" men, systems that need their salesmen, and situations in which you need to cover your ass. But maybe we can tell the truth more often than we think. Maybe telling the truth is easier than we think. And maybe, just maybe, it's more practical than we think.

Now, more than ever, Ernest



Leatherman, a dp manager for AMF Inc., Houston, TX, thinks so. The last time his name appeared in this magazine was in an article about occupational stress. ("Before you reach your breaking point," February 1982). Leatherman was an ideal subject for that piece because, at one point in his career, he displayed some rather dramatic manifestations of occupational stress.

There he'd be, asleep in the middle of the night, when a sudden, severe jolt of pain radiating across his chest and head would awaken him. At first, he thought it was a heart attack. After an extensive battery of medical tests, however, and seven more such attacks, the pain was determined to be psychological in origin, rather than physical. Since these episodes, Leatherman has learned to relax. And as a part of his effort to do so, he says he tries not to lie as much.

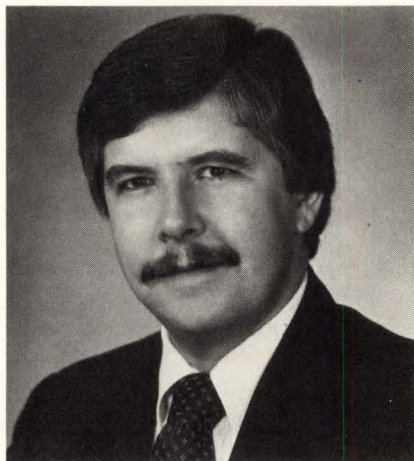
"Before," he says, "when someone would ask how my project was going, I'd say it was 80 percent done when it

was actually 50 percent done. Then I'd work the weekend and 18 hours a day to catch up. After I had those attacks, I stopped doing that. You know," he adds, "I lied because I was afraid my colleagues would think I wasn't doing my job. But I've found that they understand. I tell them that certain things have held me up, and they say: 'Yeah, I'm behind too.'"

Another MIS/dp executive who tells the truth and is glad he does is Gene Bedell. He remembers the first business meeting he had with the controller at FMC Corp., the Chicago-based chemical- and machinery-manufacturing conglomerate Bedell started working for six years ago. "Upgrades to a financial-reporting system needed to be done. Throughout the entire meeting, the controller tried to get us to commit to completion by a certain date. I had looked at the project from every possible angle, and knew that we couldn't possibly do it. It was just too big and too complex. So, I said to him: 'Just because you want it done, and just because it's extremely important, that doesn't mean it can be done. If you want me to, I'll tell you it'll be done. But it still won't get done!'"

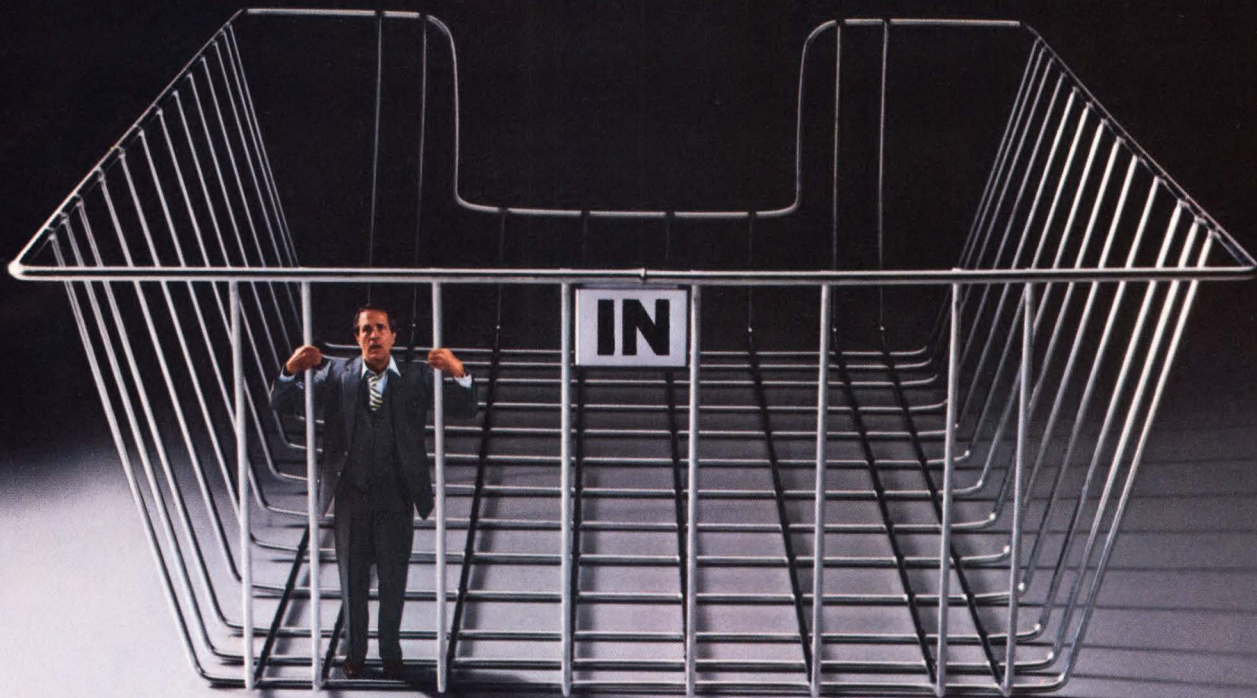
Eventually, says Bedell, the controller saw the light, and the rest of the meeting was dedicated to prioritizing pieces of the project, rather than contemplating an impossible task. Bedell recalls: "I didn't feel the slightest temptation to give in, because if he had gotten me to make a commitment, I wouldn't have been able to meet it. And what would that have proved? Not that the controller could trust me; only that he could push me around."

Of course, there are times when telling the whole truth is neither possible, practical, nor wise—especially when you have a family to support and ambitions to feed. But if you're having trouble deciding what to do, you might keep in mind something Mark Twain said. "When in doubt, tell the truth," he advised. "It will confound your enemies and astound your friends." □



Since becoming a born-again Christian, Stephen Ferreira, dp manager at Felton Brush Inc., Manchester, NH, believes that lying is a mortal sin.

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BUILDING UP YOUR PERSONAL COMPUTERS

PART I: DATA-OUTPUT DEVICES

Using a personal computer as the foundation, a small system is built with four peripherals: data-output and -input devices, memories, and boards. Part I of this four-article series examines output options.

by Jennifer E. Beaver, Southwestern Editor

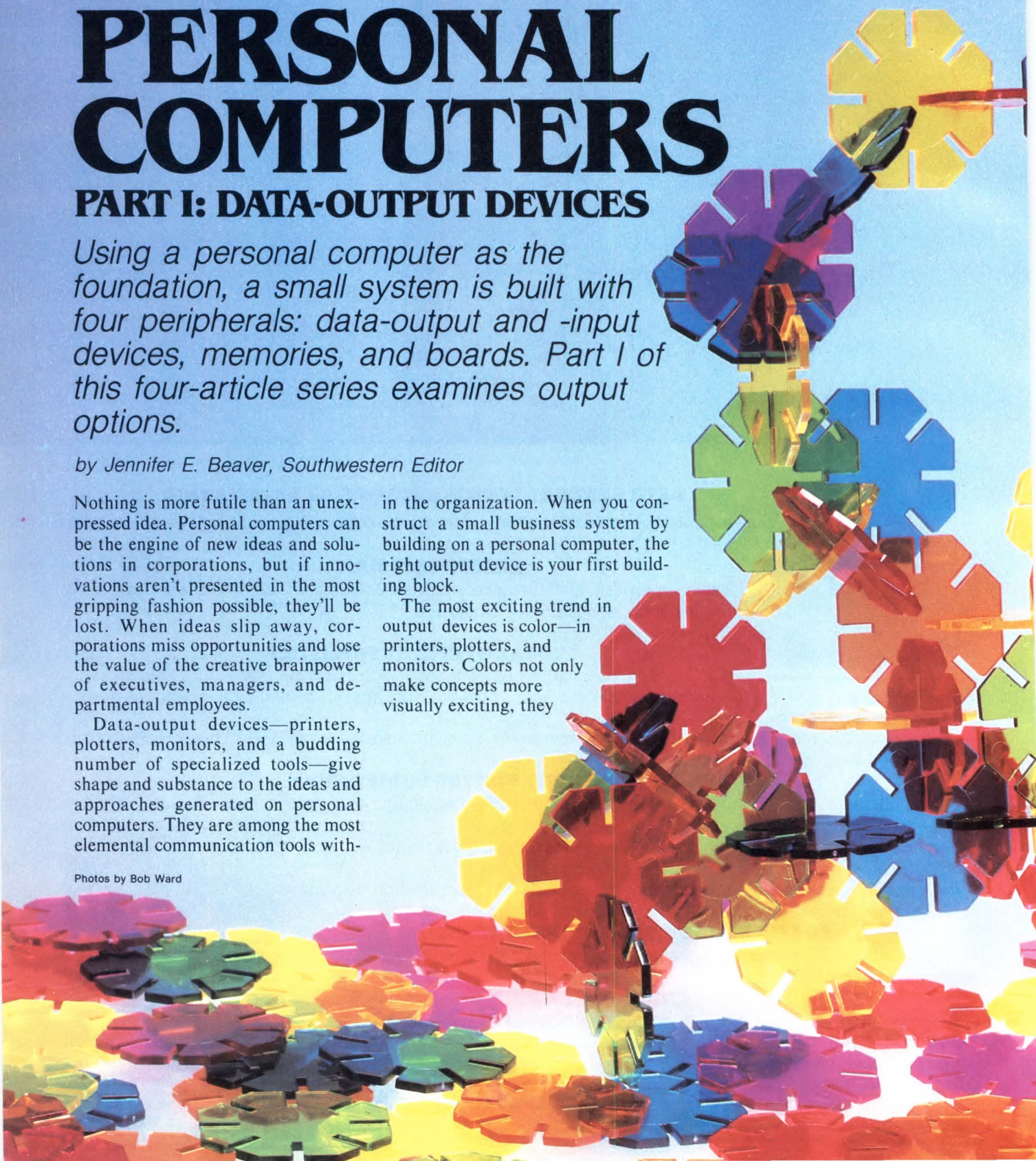
Nothing is more futile than an unexpressed idea. Personal computers can be the engine of new ideas and solutions in corporations, but if innovations aren't presented in the most gripping fashion possible, they'll be lost. When ideas slip away, corporations miss opportunities and lose the value of the creative brainpower of executives, managers, and departmental employees.

Data-output devices—printers, plotters, monitors, and a budding number of specialized tools—give shape and substance to the ideas and approaches generated on personal computers. They are among the most elemental communication tools with-

in the organization. When you construct a small business system by building on a personal computer, the right output device is your first building block.

The most exciting trend in output devices is color—in printers, plotters, and monitors. Colors not only make concepts more visually exciting, they

Photos by Bob Ward



help you get a message across quickly. In the case of monitors, color displays help battle eye fatigue.

Color printers traditionally cost the proverbial arm and leg, but that's changing. Many new dot-matrix printers can be fitted for color, and they're traditionally less costly than

daisywheel printers. Advanced Matrix Technology Inc., a startup vendor, claims to offer one such printer. Called the AMT Office Printer, the machine combines the equivalent of daisywheel print quality and paper-handling flexibility with the speed and multiple fonts of dot matrix, according to the vendor. The printer, priced at \$2,895, even prints transparencies for overhead projectors, a function heretofore reserved for plotters.

The newest of printers can also serve many users. Rather than provide a printer for each personal computer, you'll be able to provide a workhorse machine to be shared by a number of offices. Given the vast number of vendors and products, choosing a printer can be a daunting task. The only reliable way to make choices is to outline each user's needs and match a printer to the priorities. Of course, the same can be said for implementing all output devices:

Every office has different factors to consider.

The first consideration should be the layout of the office for which you're designing small systems, says James Vernon, a consultant based in Flower Mound, TX. To some extent, your choice of printer may be dictated by the configuration of offices. Consider ergonomics at its most fundamental level: Disruptive equipment interferes with work. Although daisywheels and personal computers can be hooked in parallel without cre-

ating a deafening roar, dot-matrix printers are another matter. Noisy, vibrating dot-matrix machines should be placed behind soundproof panels, says Vernon. Under no circumstances should a dot-matrix printer be placed on the same work surface as a disk drive or personal computer—the dust raised by vibrations can cause both to turn foul.

An increasingly attractive option for organizations that do a large amount of printing is a shared facility. Such an arrangement is more efficient than supplying each user with an individual machine. In addition, a shared machine can be positioned behind noise-muffling screens, an option that's far quieter than an office full of individual printers.

Some organizations that started with individual printers are switching to big, shared machines. General Motors Corp., Detroit, for example, is tying personal computers used in the office to fast laser printers to achieve greater efficiency.

At GM's Environmental Activities Department, the product isn't cars, it's documents. The department prepares reams of position papers and reports on local, state, national, and international emission-control and safety issues. Some of the reports are used to form policies; others go out to government agencies.

Two years ago, the department's office-automation plan deployed Model 820 personal computers from Xerox Corp. linked on an Ethernet network to 35 dot-matrix and daisywheel printers. Now, users transmit their work to one of two Xerox 2700 laser xerographic printers, says Michael Flynn, project manager. He estimates productivity gains of up to 300 percent on some tasks.

(Continued)



Personal-Computer Peripherals

(Continued from page 95)

The two printers serve 145 personal-computer users. The department switched to central printers for a number of reasons, says Flynn. First, the production rate of the laser printers is 12 pages per minute, or about nine times faster than a typical daisywheel printer. Second, the laser printers are more capable. They offer 32 different type styles in various sizes. The central printers also produce finished documents—eliminating typesetting costs. Each unit costs \$18,995 or can be leased for about \$600 a month. Volume-purchase discounts are available.

Sporty and speedy

Printers are often described in the lexicon of sports cars. Sleek. Fast. High-performance. These terms re-

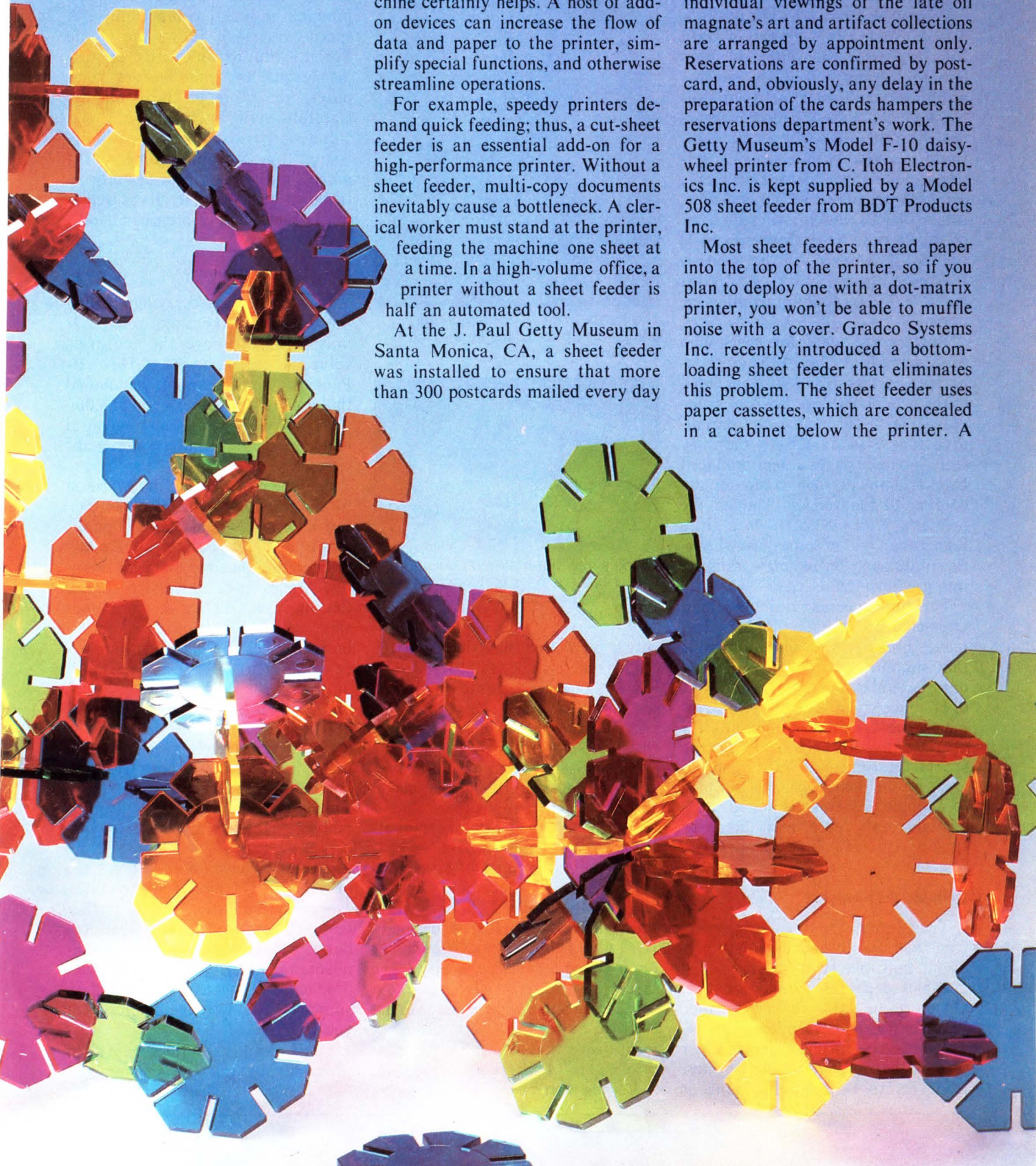
flect the traditionally heavy emphasis on speedy and trouble-free printer operation.

Machine speed has been rising for some time—without pushing up costs. For example, the Delta-10 dot-matrix printer from Star Micronics Inc. reproduces the alphabet six times within a second, according to

the vendor. The price for this zip is \$650.

But speed increases are not solely dependent on fast printers. Indeed,





the key to quick printing may not be the printer, although the right machine certainly helps. A host of add-on devices can increase the flow of data and paper to the printer, simplify special functions, and otherwise streamline operations.

For example, speedy printers demand quick feeding; thus, a cut-sheet feeder is an essential add-on for a high-performance printer. Without a sheet feeder, multi-copy documents inevitably cause a bottleneck. A clerical worker must stand at the printer, feeding the machine one sheet at a time. In a high-volume office, a printer without a sheet feeder is half an automated tool.

At the J. Paul Getty Museum in Santa Monica, CA, a sheet feeder was installed to ensure that more than 300 postcards mailed every day

were processed expeditiously. The Getty Museum is private: Tours and individual viewings of the late oil magnate's art and artifact collections are arranged by appointment only. Reservations are confirmed by postcard, and, obviously, any delay in the preparation of the cards hampers the reservations department's work. The Getty Museum's Model F-10 daisy-wheel printer from C. Itoh Electronics Inc. is kept supplied by a Model 508 sheet feeder from BDT Products Inc.

Most sheet feeders thread paper into the top of the printer, so if you plan to deploy one with a dot-matrix printer, you won't be able to muffle noise with a cover. Gradco Systems Inc. recently introduced a bottom-loading sheet feeder that eliminates this problem. The sheet feeder uses paper cassettes, which are concealed in a cabinet below the printer. A

Personal-Computer Peripherals

(Continued from page 97)

single-cassette model costs between \$450 and \$600; a double-cassette feeder costs \$600 to \$800.

Printing speed can also be compromised by slow movement of data from processor to printer. If users have to transmit files one-by-one to a printer, a multi-document job will consume hours as each piece is transmitted to the printer by an operator. Buffers, available in various capacities, store text in a queue. Documents can be transmitted all at one time, rather than as each printing job completes its run. As each document is printed, the next job in the queue is started automatically. And that means a lot less thumb-twiddling for users.

Buffers are ideal for users who print many files. One of the most capacious buffers available is included in the Model 380Z daisywheel printer from Data Terminals and Communications. Its 48-Kbyte memory stores up to 30 pages of text produced by almost any personal computer, according to the vendor. Though the printer's price—\$1,500—is a little higher than that of some daisywheels, the timesaving buffer may translate into greater productivity.

For more specialized applications, Dresselhaus Computer Products Inc. makes Fingerprint, a plug-in module that simplifies switching from standard typefaces to compressed, italic, or boldface styles. The device also reduces the series of commands for clearing a printer buffer, setting special margins and tabs, and increasing the density of lines per inch to a single keystroke. Fingerprint is available only for printers made by Epson America Inc.; its price is \$59.95.

Reliable performance

Translated, the term high performance usually means quiet operation, multiple type styles, special graphics capabilities, and the like. Once again, gains in performance have not necessarily driven up prices. For instance, at 150 characters per second, the Z-125 dot-matrix printer from Zenith Data Products Inc. is



The Xerox 2700 electronic printer completes up to 12 pages a minute, and can be shared.



Epson's new dot-matrix 80-column printer has standard features like 128 type styles and graphic-reproduction capabilities.

only a bit slower than the Delta-10, but it's quieter. The cost: \$1,499. The RX-80 dot-matrix printer from Epson America offers 128 type styles, and reproduces graphic displays. It costs \$399.

Sophisticated features alone, however, do not make a useful printer. James Vernon cautions that reliability is probably the most important attribute a machine must have—even if it is at the expense of speed and performance. For example, Vernon has used the Model 7700 daisywheel printer from NEC Home Electronics (U.S.A.) Inc. for three years, and has never called for service, he says. The latest dot-matrix offerings from NEC integrate a wide carriage and a 3-Kbyte buffer. NEC also offers an inexpensive daisywheel (\$695) that prints up to 14 characters per second.

Vernon warns users to heed a com-

patibility caveat for printer-hunters: Don't take anything for granted. Some vendors, like Qume Corp., promise universal compatibility. A special interface allows the Qume Sprint II Plus to work with every major personal and small business computer, according to the company. Carefully verify such claims.

Software is also a big compatibility issue, says Vernon. Some word-processing software provides proportional space between letters as well as words, but not all printers can handle this capability.

Say it with graphics

Remember the old saying, "A picture is worth a thousand words?" It may underestimate the picture's value. A projection by a Hewlett-Packard Co. researcher concluded that a picture is actually worth 4,000 words, says Brian Moore, general manager of the vendor's plotter division.

And therein lies the main reason for the growing popularity of plotters. Put into graphs and charts, figures, trends, and ideas become more easily grasped and possibly more meaningful. Moore cites university studies that indicate graphics for data analysis and presentation can shorten business meetings, double an employee's ability to sell ideas, and make information up to 10 times easier to absorb. Those figures may be a bit abstract, but their message comes as no surprise to a manager who's sat through presentations both with and without graphics. The former are infinitely more entertaining and informative. And that's a formula for success.

The lesson hasn't been lost on some managers. "The manager who makes a better presentation will go farther than the next guy," asserts John Roberts, business manager at Manesmann Tally, a plotter maker. "Managers are using plotters to support their career-advancement goals."

Until recently, plotters were used primarily by the engineering and

(Continued on page 102)

Before you buy a printer look at the fine print.

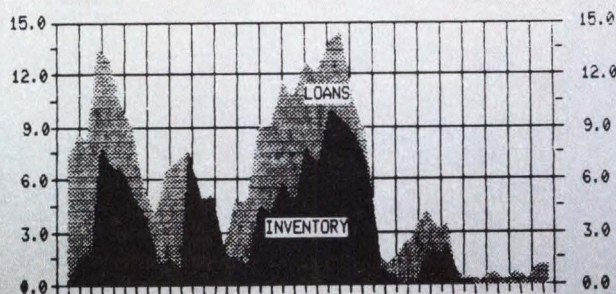
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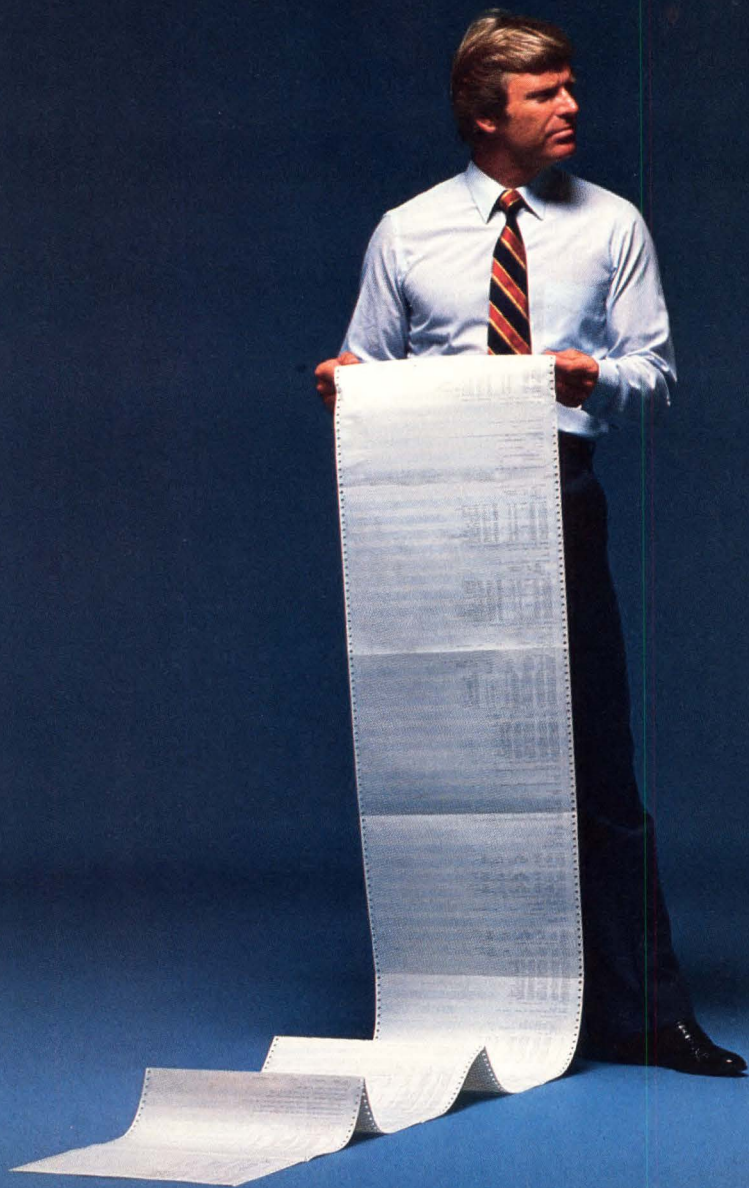


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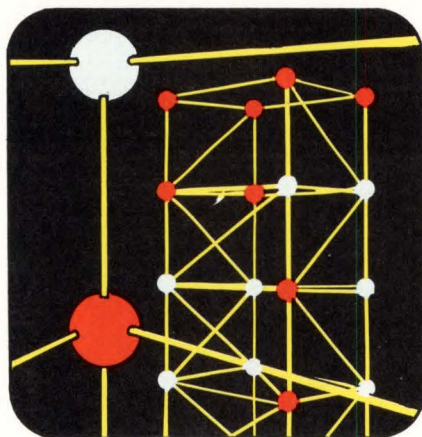
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Personal-Computer Peripherals

(Continued from page 98)

scientific communities. For them, translating abstract ideas into concrete images is essential. The early machines could reproduce fine details and precise proportions, essential qualities for that kind of work. Their cost was higher than that of printers.

Now, all sorts of business users are installing plotters, in part because the price has dropped dramatically during the last two years, from an average of about \$2,500 to about \$1,000. Price improvements are the result of scaled-back capabilities that serve more general needs. Reproduction of business graphics simply doesn't de-



mand the same degree of precision and detail as, say, engineering drawings. One business machine, the Pixy

3 Microplotter, a three-pen device from Mannesmann Tally, costs \$800.

Dixon Green, a partner in the Denver office of Touche Ross & Co., the New York-based Big Eight accounting firm, chose the HP 7475 six-pen plotter for a very simple reason: "The ability to use color and graphs makes my message easier to understand."

Touche Ross' Denver office uses the plotter with an IBM Personal Computer for a number of applications. Graphics dress up reports on the office's financial status, making them more immediately meaningful to the home office. Green also uses the plotter to make overhead transparencies for seminars on personal computing conducted by his office.

The HP 7475 draws at the speed of about 15 inches per second, enabling it to produce an average-sized chart in about three minutes. Its 22-by-14-by-5-inch footprint doesn't take up much precious desktop space, and the cost is \$1,895. A two-pen version costs \$1,095.

Software choices

Green primarily uses 1-2-3, an electronic spreadsheet from Lotus Development Corp., Cambridge, MA. But other software packages are available to transform data into graphics, with more vendors jumping on the bandwagon daily. (Hewlett-Packard publishes a free software guide that outlines 10 packages that can be used with either its six- or two-pen plotters and the IBM PC.

If you need plotter graphics with an individual touch, Geograf from Geocomp Corp., Concord, MA, helps you write the necessary software. Users must have some knowledge of Basic, according to the vendor. The package runs on a personal computer running the CP/M or MS-DOS operating system.

Compatibility is an important issue in the decision to buy a plotter. Some vendors provide companion software that lets their plotters function with a number of personal computers. Enter Computer, for instance, offers Sweet-Plot 80, a \$350 package,

A sampling of output-device vendors

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Circle 401

C. Itoh Electronics
(213) 306-6700
Circle 492

Data Terminals & Communications
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Circle 402

Epson America
(213) 539-9140
Circle 403

Qume
(408) 942-4000
Circle 404

Star Micronics
(212) 986-6770
Circle 405

Vivitar Computer Products
(206) 454-6307
Circle 419

Xerox
(213) 536-7000
Circle 406

Zenith Data Syst.
(312) 391-7000
Circle 407

Add-ons

BDT Products
(714) 660-1386
Circle 408

Dresselhaus Computer Products
(213) 914-5831
Circle 409

Gradco Syst.
(714) 549-9175
Circle 410

Plotters

Amdek
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Circle 490

Comrex Int'l.
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Circle 411

Enter Computer
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Circle 412

Hewlett-Packard
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Circle 413

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Circle 414

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Circle 486

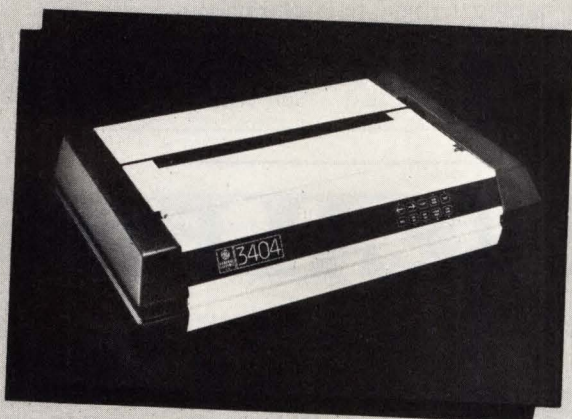
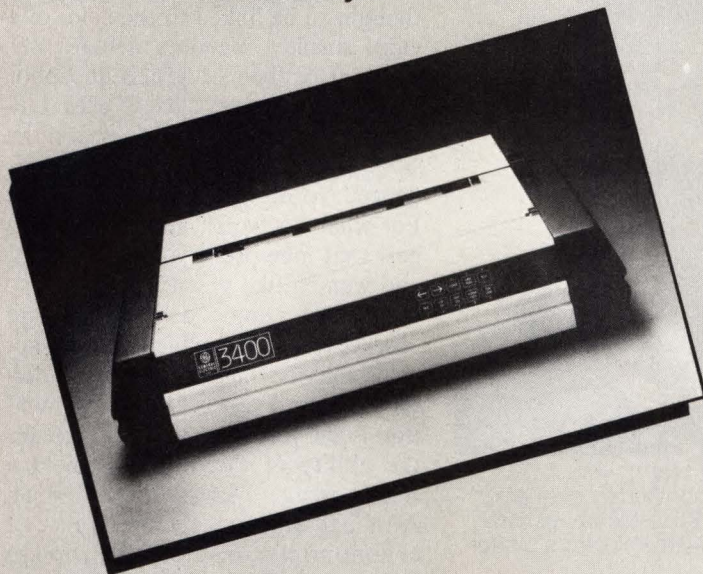
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Personal-Computer Peripherals

(Continued from page 102)

with its Sweet-P Personal Plotter (\$795). Alone, the plotter can be hooked through a Centronics-compatible interface to the IBM PC and personal computers made by Apple Computer. With the special software, it can also be added onto Altos Computer systems, the Eagle II, the Epson QX10, Kaypro II, the NEC APC, the Osborne 1 and Executive models, the Xerox 820, and the Zenith Z-100. Still, carefully check compatibility when considering plotter models.

At 7 pounds, the Sweet-P is one of a growing number of portable plotters. Comrex International Inc. offers a briefcase-size plotter that operates with many personal computers. The Comscriber I's dimensions are 3 by 14 by 9 inches; and the price is small, too, at \$695.

The color and resolution of a monochrome video monitor and a host of environmental conditions have a big impact on how your eyes



Studies indicate that graphic presentations can shorten business meetings, says Brian Moore, general manager of Hewlett-Packard's plotter division.

feel after the end of an hours-long stretch in front of a tube. Fatigue reduces the impact of information, particularly on users who pore over dozens of spreadsheets or reams of text.

Reducing fatigue has long been thought to be linked to the color of a video display. Vendors debate over whether amber or green-phosphor displays are easier on users' eyes. Unfortunately, none of the studies on the subject have produced conclusive evidence favoring either amber or green. For what it's worth, the studies suggest that men prefer amber displays, and women like green.

However, some consultants and observers believe image stability, not color, may be the most important factor. "The true test is how easy a monitor is on the eye—and that means the ability of the screen to hold a steady image," says James Vernon. Although amber is the preference of ergonomics-conscious European companies, Vernon insists amber screens flicker more than do green-phosphor models. "You can't really see the flicker," he says. "But at the end of two hours, you may find yourself with a headache from it." (Cont)

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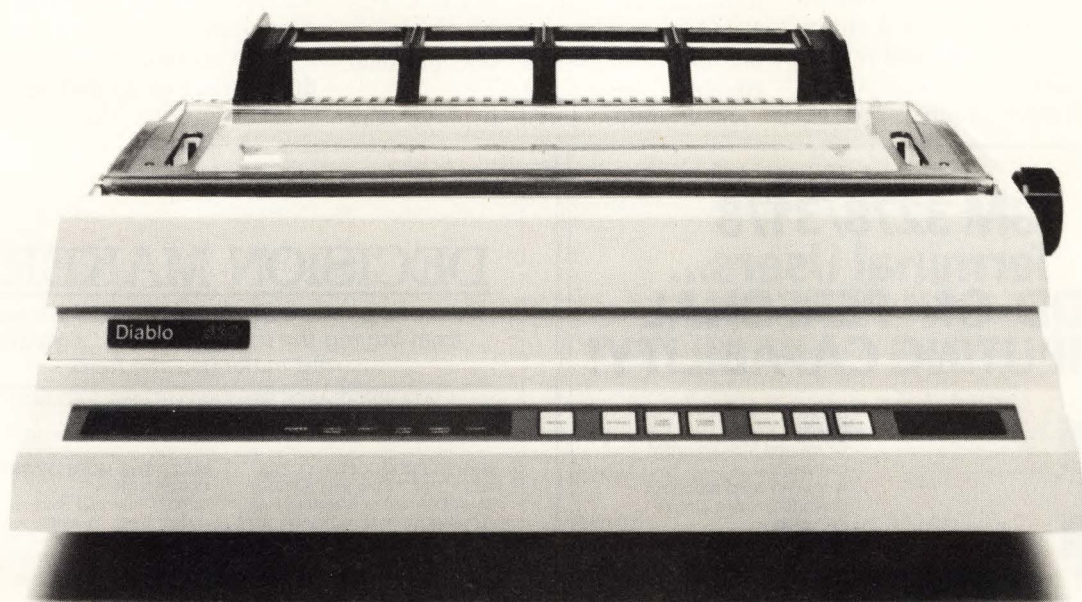
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CIRCLE 60

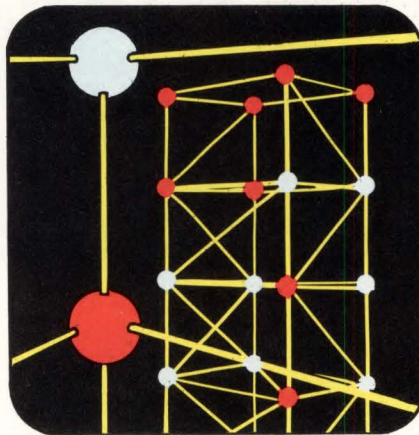
Personal-Computer Peripherals

(Continued from page 104)

The price differential between amber and green-phosphor displays is insignificant. A 12-inch monitor with resolution of 1,000 lines from Comrex, for example, sells for \$179 in green and \$189 in amber. So, you'll be left to judge monitors on special features and other qualities.

The ZVM Models 122 (\$169) and 123 (\$149) from Zenith Data Products, for example, incorporate several features that give users better control over the screen image. Each monitor has a switch that increases character size when the computer has a 40-column display. Users can adjust the contrast, horizontal and vertical hold, and vertical height of the image.

One way to circumvent the question of which monochrome format is better is to install color monitors. These VDTs aren't standard equipment in most offices for good reason: they're considerably more expensive than monochrome terminals. For ex-



ample, a combination color monitor and graphics board from Color-graphic Communications Corp. displays sharp graphic images on the IBM PC, but at a price of \$3,495, a little more than the IBM PC itself. Not all color monitors are so expensive, of course. NEC's JC-1216MA monitor, which is compatible only with NEC's APC personal computer, costs \$599.

Still, multicolored displays may

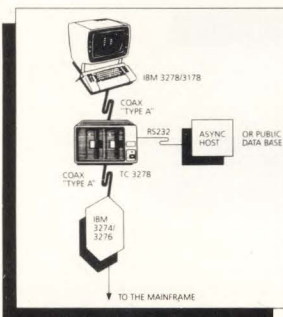
help combat user fatigue in sensitive applications, in which errors are costliest. Also, as the number of software offerings for color monitors rapidly expands, their usefulness might increase the value of color monitors—and justify their cost. New software offerings are zapping such garden-variety applications as word processing, for example, with color. The new Wordstar edition (from Micro-Pro International Corp., San Rafael, CA) picks out errors in bright yellow—a highly visible, time-saving feature for employees who must review lots of text.

Plotters are one method of reproducing color displays. However, some tools let users make slides of their displays. The Video Slide 35, from Lang Systems Inc., for example, costs \$2,799. It works with most personal computers, according to the vendor.

Most personal computers can produce a slide in 30 minutes for about

(Continued on page 110)

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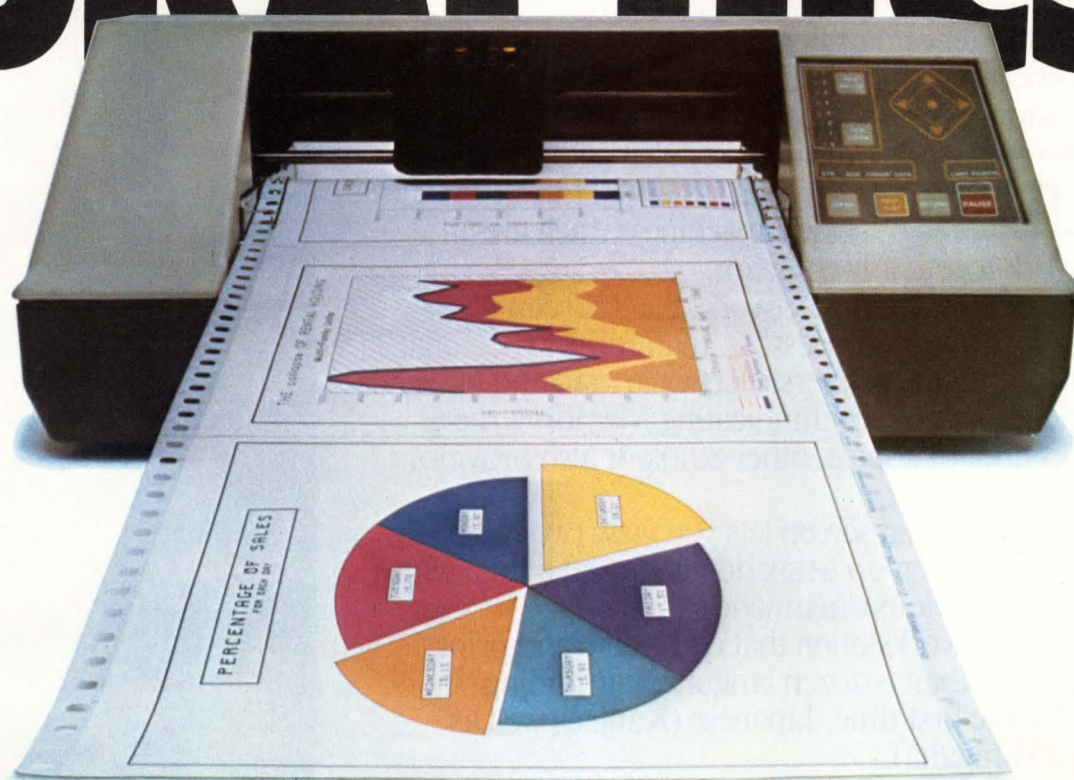


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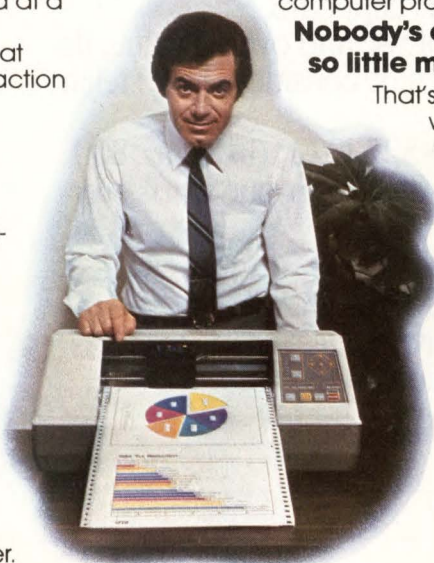
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designed to work together like a team.

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Its full 17" bit-mapped screen lets you view two full pages simultaneously and open up to six documents at a time without covering up a previous document.

It's also the only workstation that can create and print documents in more than a dozen languages, including Russian and, for the first time, Japanese (Kanji as well as Katakana and Hiragana).

While other workstations may use Xerox innovations like the mouse, icons, windows, property sheets and combined text and graphics, the 8010 simply does more with them.

For example, the 8010's extensive software is fully integrated, to allow you to work with text and graphics simultaneously. You can draw a flowchart right in the middle of a full page of text without having to resort to a separate program and limited buffer "scratchpad" or "clipboard."

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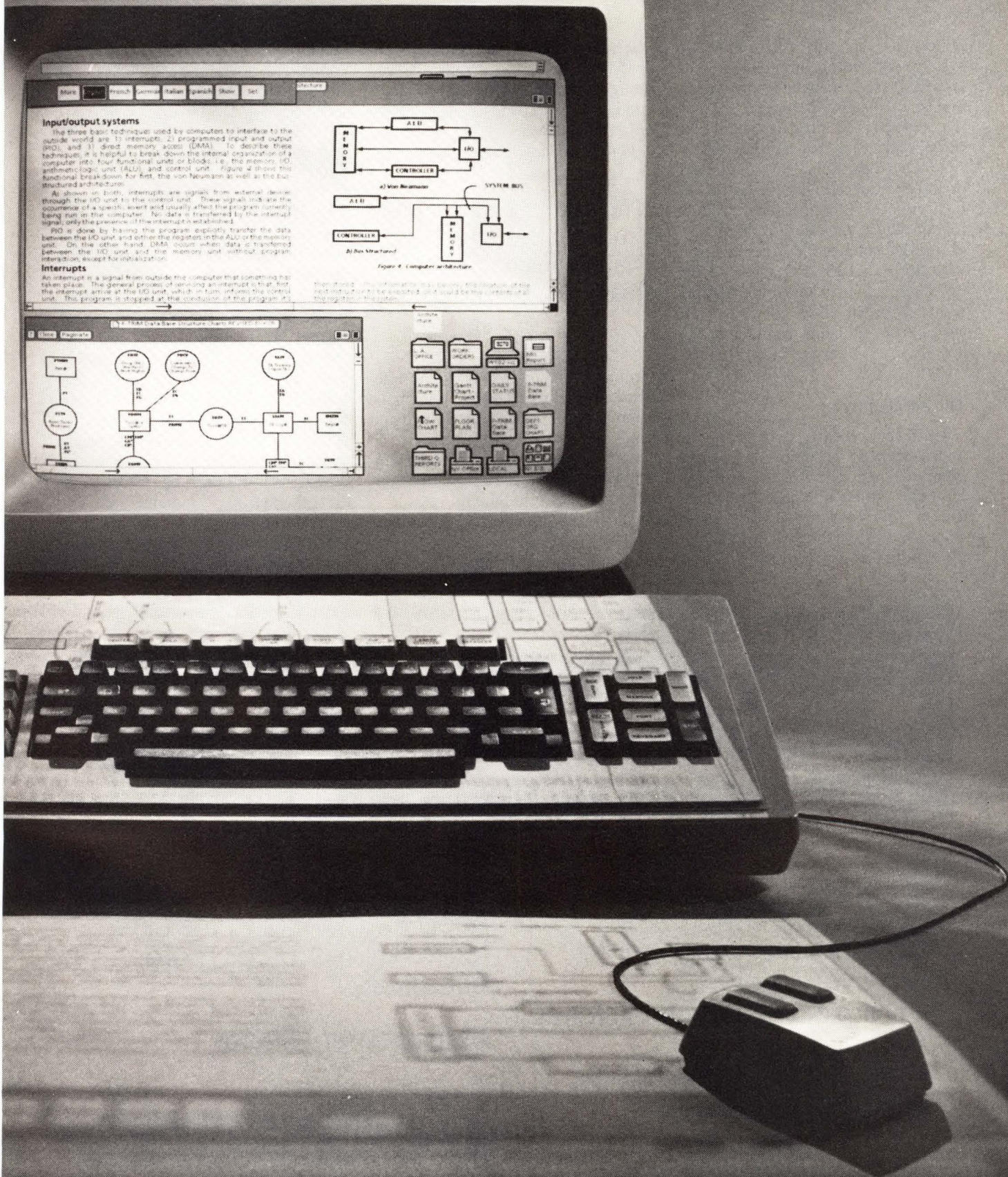
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Personal-Computer Peripherals

(Continued from page 106)

50 cents using the Video Slide 35 system, while other methods of slide creation are generally more costly and time-consuming. Indeed, sending out slides to be prepared can take three weeks and cost \$30 per slide.

James Mimplitsch, IBM's manager of information services in San Jose, CA, uses the Lang Systems product to reproduce end-user training programs. He couples the Video Slide 35 with both an IBM PC and an IBM 3279 color-display terminal, making prints from the slides. Kodak prints cost about 32 cents each, and Polaroids are 51 cents, Mimplitsch reports.

The vocal future

Until very recently, devices like the Video Slide 35 occupied the cutting edge of data-output technology. However, other specialized devices are moving to replace them, with voice synthesis leading the way. Digital Equipment Corp. (DEC), Texas

Instruments Inc., and smaller vendors, like Street Electronics Corp., brought out voice-synthesis products late last year, raising a host of potential applications.

For example, DECTalk "converses"

"The true test is how easy a monitor is on the eye. That means holding a steady image."

Vernon, consultant

through either speakers or the telephone. It makes a Touch-Tone phone a computer data-access terminal, and has obvious applications in electronic-mail systems. The system, which can be attached to any personal computer, costs \$4,000.

Texas Instruments' Speech Command is contained on two boards that plug into an expansion slot on the

vendor's Professional Computer. It comes with a pair of headphones, and the cost is \$2,600. Street Electronics' Echo Speech Synthesizers are compatible with the IBM PC and Apple personal computers; they cost \$150 to \$200.

The potential of these devices is uncertain. Obviously, installing speakers throughout an office that needs fewer, not more, voices won't do much to improve productivity. But speech synthesizers may be an appropriate addition to an electronic-mail system. Also, in the privacy of a lone office, an executive might appreciate listening to a report summary at the end of a long day rather than reading through it. The devices may also be useful for meetings. In any case, your decision should be based on how the device fits into a particular workplace and whether it will maximize the expression of ideas and concepts. But that's good general advice for choosing any output device. □

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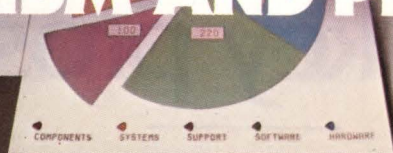
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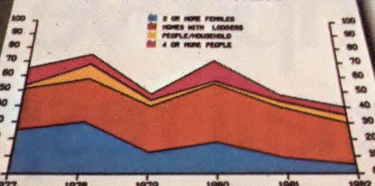
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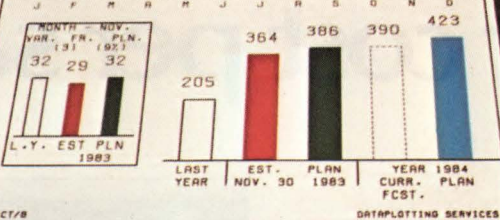
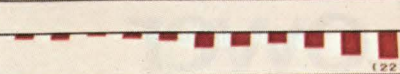
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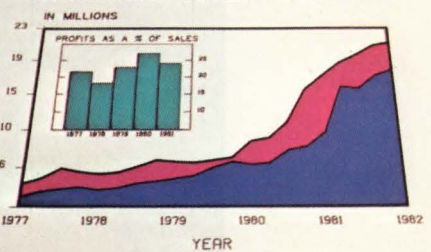
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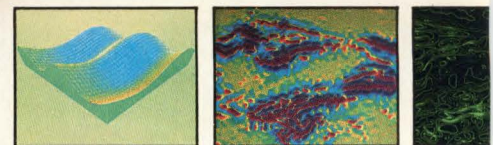
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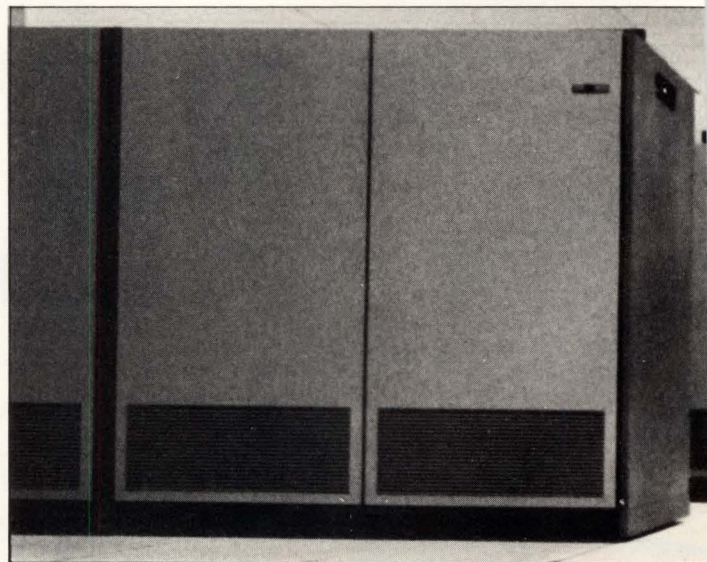


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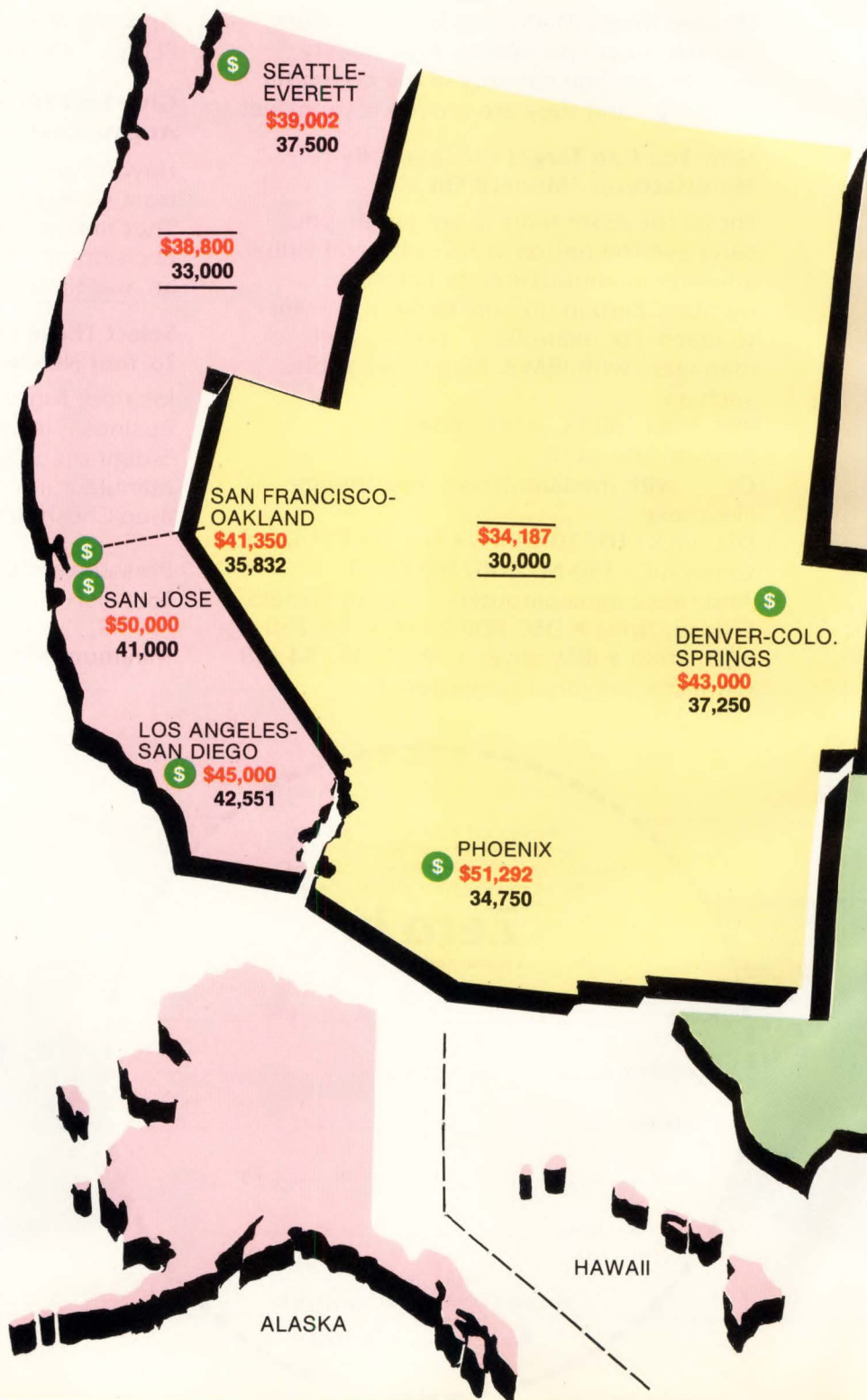
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According to the latest *Computer Decisions* Salary-Status Survey, most MIS/dp managers realized healthier gains in 1983 than they

MIS/dp managerial salary increases in 1983 weren't spectacular, but steady growth continued. Did you measure up to the average?

SALARY-STATUS SURVEY, PART 1

by David Whieldon,
Senior Editor



KEY:

TOP MIS/DP OFFICER

DATA-PROCESSING MANAGER

Illustrations by Bob Ritter

had during the previous two recessionary years. MIS/dp officers and managers made modest gains last year, and the overall figures indicate that information processing remains a good place to be.

Most industries have recovered from the recession. The exceptions are in manufacturing (where nearly a third of the respondents to the survey work), education, and government. In fact, MIS/dp

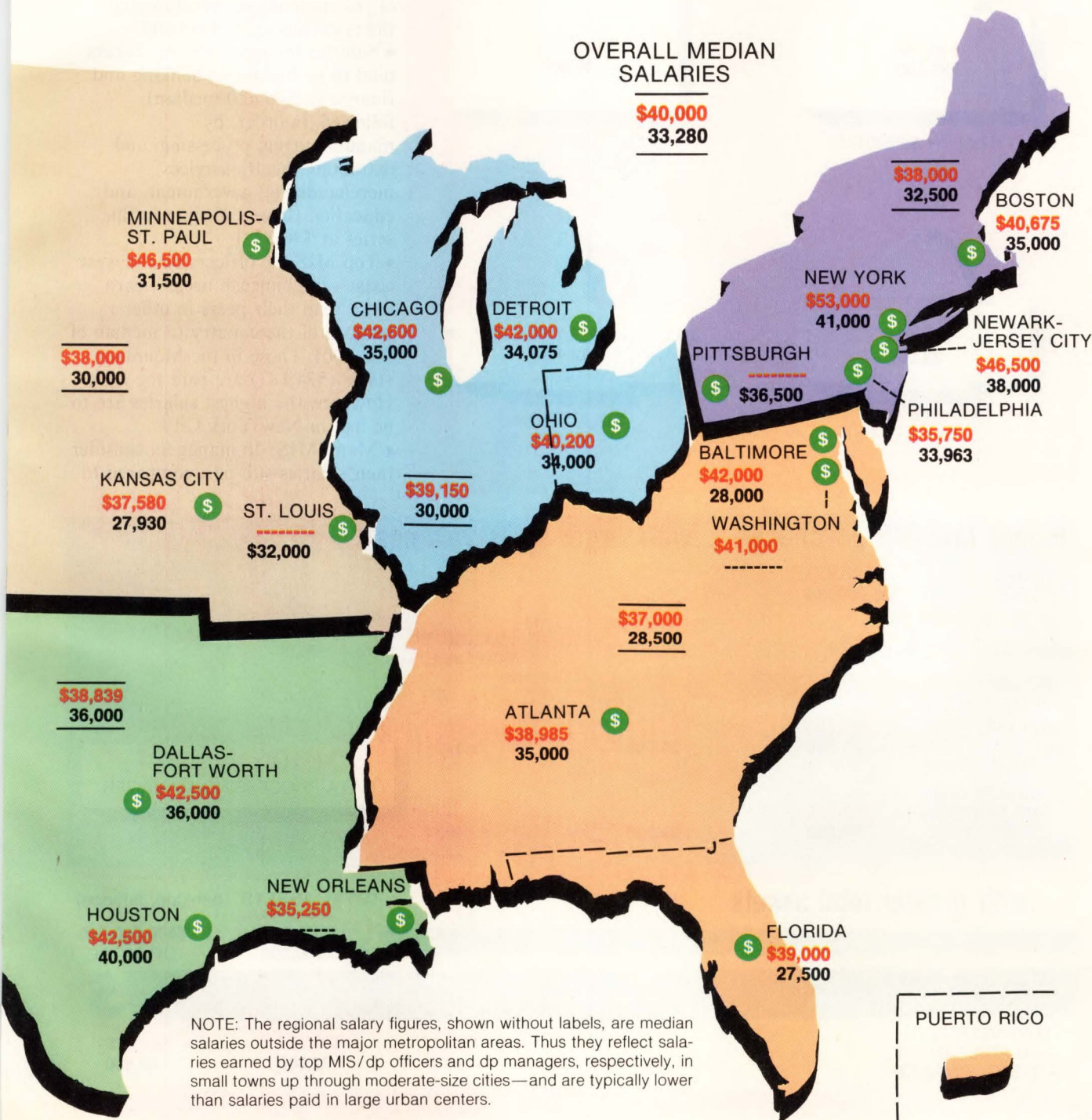
managers in government, particularly at the state and local levels, and education are still suffering from the effects of budget cuts and wage freezes imposed during the recession.

On the whole, respondents said they're more satisfied with their jobs than dissatisfied. More than half (54.7 percent) are somewhat or quite content. Nonetheless, almost 90 percent said they'd jump ship if

the incentives were attractive enough. Chief among the enticements is an increase in salary, with 83.5 percent of the respondents saying they'd move to get a heftier paycheck. However, managers aren't ready to change jobs for a peanuts salary increase: The typical manager won't move for less than a 20 percent increase.

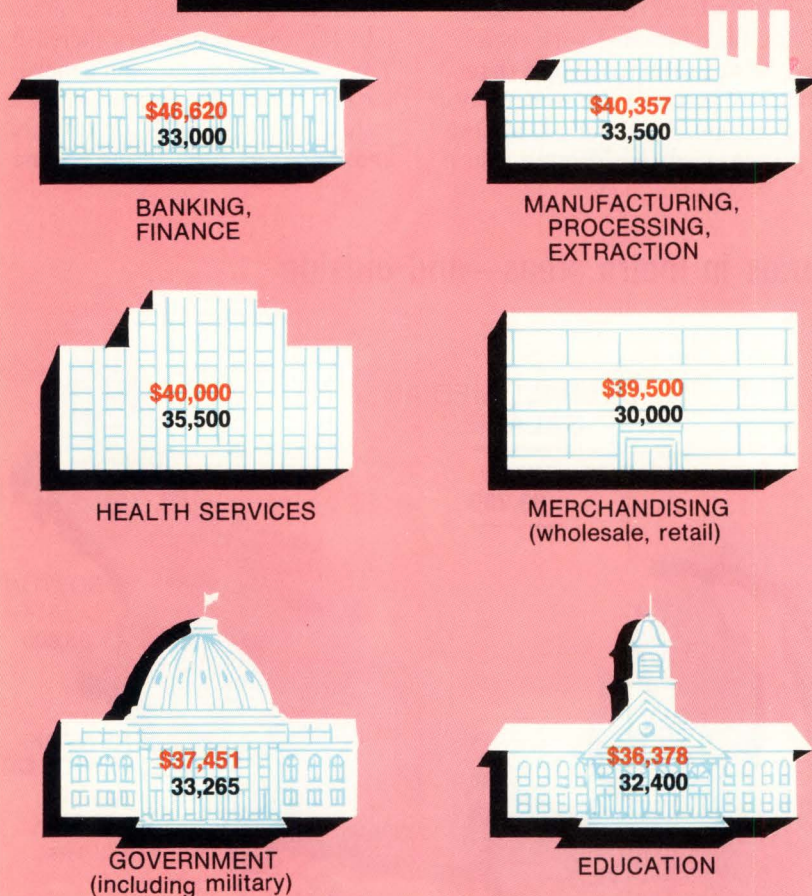
Just how have MIS/dp officers and managers been faring? Some

MIS/dp managerial salaries in metro areas—and outside



Salaries of managers vary by organization

KEY: TOP MIS/DP OFFICER
DATA-PROCESSING MANAGER



highlights from the survey results show continued growth in compensation:

- The median salary for the top MIS/dp officers was \$40,000, while the data-processing managers' pay was typically \$33,280. The top figure is 7.2 percent higher than last year's composite median for both categories.
- Nearly 80 percent of respondents received pay boosts between Aug. 15, 1982 and Aug. 15, 1983, the great majority without being promoted.
- Salary increases averaged 7.8 percent, but more than 75 percent of the respondents who reported raises got up to 10.9 percent.
- Salaries for top MIS/dp officers tend to be highest in banking and finance (a \$46,620 median), followed, in order, by manufacturing, processing, and extracting; health services; merchandising; government; and education (lowest median in this series at \$36,378).
- Top MIS/dp officers on the west coast—in nonurban areas—earn more than their peers in other sections of the country (a median of \$38,800). Those in the Mountain states (\$34,187) are paid the least. However, the highest salaries are to be had in New York City.
- Many MIS/dp managers consider their salaries sub-par, compared to

Bigger MIS/dp paychecks . . . with larger sales volumes

ANNUAL SALES	UNDER \$25,000,000	\$25,000,000-\$99,999,999	\$100,000,000-\$499,999,999
MANAGERIAL SALARIES IN MANUFACTURING, PROCESSING	\$34,500 29,500	\$42,000 35,000	\$52,000 39,800
MANAGERIAL SALARIES IN OTHER THAN MANUFACTURING	\$35,680 29,000	\$41,500 35,000	\$46,000 42,000

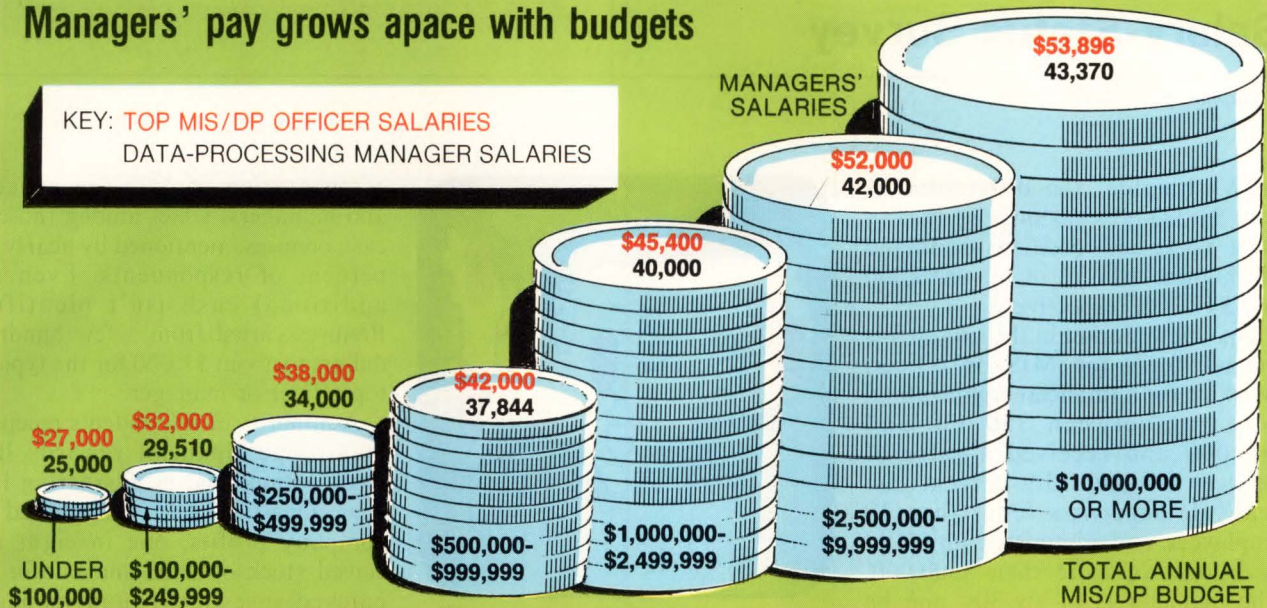
TOP MIS/DP OFFICER
DATA-PROCESSING MANAGER

...with greater total assets

TOTAL ASSETS (banking, finance)	UNDER \$500,000,000	\$500,000,000 OR MORE
MANAGERIAL SALARIES IN BANKING, FINANCE	\$43,000 32,000	\$46,620 40,500

Managers' pay grows apace with budgets

KEY: TOP MIS/DP OFFICER SALARIES
DATA-PROCESSING MANAGER SALARIES



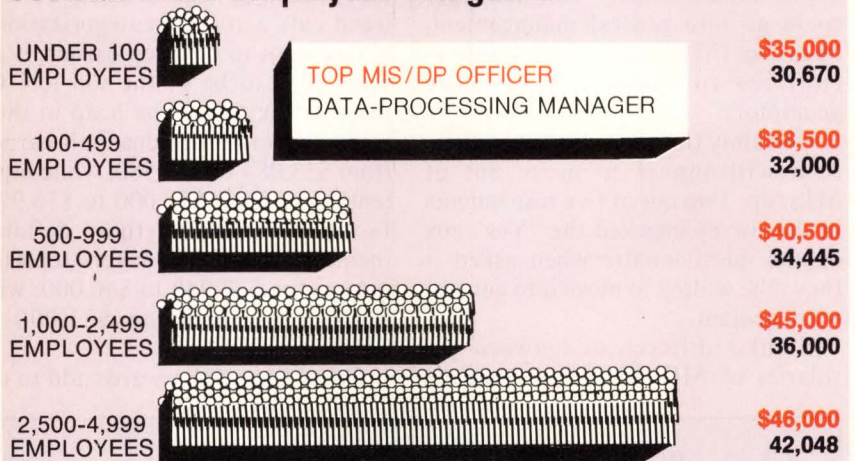
the salaries of managers with comparable responsibilities. However, almost 30 percent of the respondents said their salaries are better than those of other managers.

- Cash compensation above and beyond salary is a relatively small element in the wage picture. The typical top MIS/dp officer earned a little less than \$1,000 in extra compensation last year. The typical dp manager earned \$720.

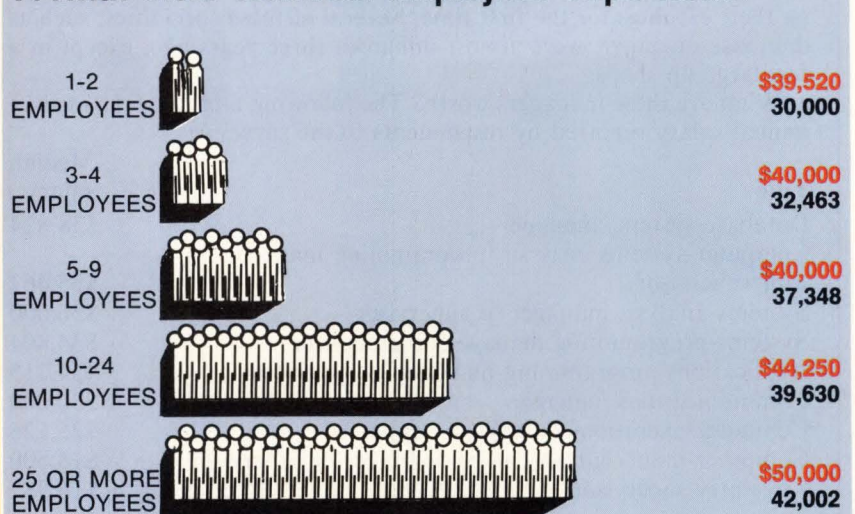
This year's Salary-Status Survey is different from those of past years. It was conducted by Abbott, Langer & Associates, and it examines compensation trends in two management categories: top MIS/dp officers and dp managers. *MIS/dp officers* are those who have "primary responsibility" for MIS/dp. They do not work in "company or financial management." *Dp managers* plan, organize, and control data-processing functions like systems analysis, programming, and computer operations. In most cases, the dp manager works for an MIS/dp officer.

The differences in responsibility produce a substantial difference in salaries: The nationwide median for top MIS/dp officers is almost \$7,000 higher than the national median for dp managers. But the spread varies considerably. Comparing medians in the cities, for example, the top officer in Chicago gets \$7,600 more in annual salary than a dp manager, whereas

Higher MIS/dp salaries in larger organizations ...with more employees altogether



...with more technical employees supervised



Salary-Status Survey

(Continued from page 117)

in Washington, the differential is only \$1,033. It's no surprise that in New York, both positions command the highest salaries of all—\$53,000 and \$41,000, respectively.

One New Yorker in the survey fills the bill for a top MIS/dp officer. Working for a financial organization, he earns between \$50,000 and \$60,000 and received a raise of between 11 and 13.9 percent last year. He supervises fewer than 10 employees, and administers an MIS/dp budget of more than \$500,000. The manager is in his 30s, and he believes his salary is better than that of other managers. Nevertheless, he would change companies for greater challenge and "significant ownership of the organization." This manager could go into general management, because there he'd find "opportunities to become a revenue generator."

Certainly this manager is not alone in a willingness to move out of MIS/dp: Two out of five respondents in the survey checked the "Yes" box on the questionnaire when asked if they'd be willing to move into general management.

Similar differences between the salaries of MIS/dp officers and dp



managers appear when organizations, sales volumes, budgets, number of employees, and other factors are taken into account. (See the charts that accompany this article.) But one trend cuts across all categorizations: If you want to be a top earner, it always pays to be in the top job! Of those at the top of the heap in their respective organizations, half earned from \$33,084 to \$47,580, while nine-tenths got from \$27,000 to \$56,990. In contrast, half of those defining themselves as dp managers reported incomes of \$27,948 to \$40,000, with nine-tenths receiving \$23,000 to \$45,000.

Other financial rewards add to the

compensation of MIS/dp officers and managers. Chief among those is cash bonuses, mentioned by nearly 30 percent of respondents. Even so, additional cash isn't plentiful. Bonuses varied from a few hundred dollars to about \$1,000 for the typical top officer or manager.

A minority of respondents received long-range financial rewards like stock options and profit-sharing last year. One-fifth said they shared in company profits, one in eight received stock options, and one in 10 enjoyed investment-fund management. (Other benefits, which may indirectly boost income by 30 to 40 percent, will be discussed next month in Part II of this article.)

Right place, right company

Rates of pay, of course, depend on more than job titles. Where you are—geographically and economically—has a big impact on the amount of money you make. Even if you're not the top officer in MIS/dp, you may be doing well just because you're in a particular part of the country, the right kind of organization, or the right size organization. (The corollary, of course, is that you may not get what you'd like because you're in the wrong spot.) The manager in charge of dp for a Long Island-based manufacturer, for example, typifies the right mix. His company has sales of more than \$100 million. The manager administers an MIS/dp budget of between \$1 million and \$2 million and has between 30 and 39 subordinates. The manager, who's in his 30s, earned between \$50,000 and \$60,000 last year.

Location is a conspicuous factor in salary comparisons, and "city mice" live better than "country mice" in MIS/dp. Generally both top MIS/dp officers and dp managers draw larger paychecks in the metropolitan areas than in smaller cities and the countryside.

For example, the top MIS/dp officer typically earns \$45,000 in the Los Angeles-San Diego area and \$41,350 in the San Francisco-Oakland area. Those figures contrast

The "other" managers

The number of specialized MIS/dp managers has ballooned in recent years, and this year's *Computer Decisions* Salary-Status Survey reports on their earnings for the first time. Several of these specialties, such as database manager, were almost unknown three years ago, except in a few large dp shops.

What are these managers worth? The following table lists the median annual salary reported by respondents to the survey.

Title	Median salary
Database-systems manager	\$38,824
Computer-systems analysis/programming manager or supervisor	\$35,462
Systems-analysis manager or supervisor	\$36,000
Systems-programming manager or supervisor	\$34,804
Applications-programming manager or supervisor	\$34,715
Communications manager	\$30,000
Computer-operations manager or supervisor	\$25,126
Computer-input/output-control manager or supervisor	\$18,500
Key-entry supervisor	\$16,932

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CIRCLE 137

Salary-Status Survey

(Continued from page 118)

with \$38,800 median salary *outside of the four major metropolitan areas* in the Pacific region (California, Washington, Oregon, Alaska, Hawaii, Guam). A dp manager typically earns \$33,963 in Philadelphia and \$35,000 in Boston; outside of the five big northeastern metropolitan areas, the amount is \$32,500.

That nonurban median of \$32,500 for the northeast is better than the median \$28,500 for the southern states, again excluding metropolitan areas. In between is the \$30,000 for the Mountain region and also for the north-central states.

Salaries also reflect the size of an organization, its dependence on information processing, and the industry of which it is a part. Which companies pay the most? Bigger organizations generally have larger MIS/dp budgets, and as budgets grow, so do salaries. In fact, the top MIS/dp officer can expect to double his or her salary by moving from an organization with a budget of less than \$100,000 to one with \$10 million or more. Such a move probably won't be possible in one step, but many managers work through the ranks from small to large organizations.

"Total annual MIS/dp budget, along with supervisory responsibility, is an excellent predictor of income in the MIS/dp field," says Steven Langer, head of Abbott, Langer & Associates. The median budget in the survey was \$388,679; the *average* (or mean) budget, which was more influenced by the 26 respondents with budgets of \$40 million or more, was just under \$2.5 million.

Likewise, salaries roughly correlate to the size of a company's total workforce. For instance, a typical dp manager in an organization with fewer than 100 employees earned \$30,670 last year. But in organizations with 2,500 to 4,999 employees, he or she earned \$42,048.

Managers who oversee more employees tend to earn more. Managers with up to nine subordinates earned a median salary of \$32,721. Those who supervise from 40 to 69 employees

earned a median of \$47,084. The type of employees a manager supervises is also important, according to the survey results. Managers who supervise many technical subordinates earn higher salaries.

Finally, education and experience pay dividends, too, as most managers have discovered. For instance, a top MIS/dp officer without a college degree typically earns an annual salary of \$35,888, whereas one with a bach-

Additional cash wasn't plentiful. Bonuses varied from a few hundred dollars to about \$1,000 for top MIS officers.

elor's degree receives \$40,926. Earning a Ph.D. drives up the salary to a median of \$42,000, but a master's in business administration is worth even more. Top MIS/dp officers with MBAs typically earn \$45,000.

As to experience, for the top MIS/dp officer, one to two years in the specialty fetches a median salary of only \$25,500; that figure builds gradually to the top figure of \$46,400, which accrues from 20 to 24 years. These principles hold true for dp managers as well.

As expected, organizations that are in the business of earning profits pay their information handlers better than do nonprofit organizations. The median salary for the top MIS/dp officer in banking and finance, the highest-paying field, is \$46,620. In manufacturing, processing, and extraction, the median is \$40,357. In contrast, the median salary is only \$36,378 for MIS/dp managers working for educational institutions.

Increasing demands

For many managers, of course, progress comes in increments, but the pace has increased during the last two years. Most of the respondents got a pay boost between mid-August 1982 and mid-August of 1983—even if the median increase was a modest

Salary-Status Survey

(Continued from page 121)

7.8 percent. (A year ago, the median increase was 9.1 percent.) Promotions accounted for 6.7 percent of the increases.

How did your raise last year stack up? One in six of the respondents who received a raise got less than 5 percent. One in three received a raise of between 5 and 7.9 percent; for one in four, it was 8 to 10.9 percent; and for one in 10, 11 to 13.9 percent. Only one in eight respondents got 14 percent or better.

These figures tell only part of the story, however, because at the same time, the rate of inflation has been relatively low. Thus, earning power has been increasing more rapidly than the raise statistics first seem to indicate. In 1980, the Consumer Price Index, a popular measure of inflation's impact on the cost of living, increased 12.4 percent, according to the Bureau of Labor Statistics. The CPI subsequently slowed 8.9 percent, and for the first 11 months of last year, the CPI rose at a rate of 3.9 percent.

Of course, there were the unfortunate managers who suffered pay reductions. Of those, surely one of the saddest cases was the manager in charge of MIS for a Missouri manufacturer with annual sales of between \$10 million and \$25 million. The manager reported a modest income of between \$15,000 and \$25,000. That's partly explained by the comment he added



to his questionnaire: "All employees took a 28 percent pay cut because of the recession."

These figures give you some idea of what you can expect as you plot your next move. Increased salary is the most important factor in most managers' decisions to accept positions with other employers, as indicated by the survey. Eighty-three and one-half percent would leave their jobs for more money. How much is enough? Two in five managers would demand between 20 percent and 25 percent more before they'd accept a new position. One in six would demand 26 percent or more. And one respondent, an MIS/dp officer in Houston earning a Texas-scale \$100,000 salary, would want even more. To move, he'd need a salary increase of 29 percent or more and "a total package . . . so lucrative no sane person could turn it

down. . . ." These demands seem to belie that manager's claims that he's eager to move.

Naturally, many a manager couldn't be hired away for a fatter paycheck alone. Some respondents look for the right mix of a salary increase, more benefits, and improved working conditions. A few couldn't be moved by any incentives—or might accept *less* pay to get into the right job. One manager in his 50s who hadn't received a pay raise in the period covered by the survey was unfazed. "I'm perfectly happy with where I am and would rather retire than relocate," he wrote. But then he has the good fortune to be working in La Jolla, CA, an affluent oceanside suburb of San Diego.

A young dp manager, earning between \$25,000 and \$30,000, took a pay cut when he changed employers and locales. "I got away from the Boston rat race," he said. "I'm very happy in upstate New York. Money isn't everything!"

Of course, values vary from manager to manager. Money may not be everything, but your compensation patterns over the past few years provide insight into how fast you're progressing toward your professional goals. You've got a lot invested in your career, and after seeing these salary figures—to paraphrase New York City Mayor Ed Koch—how're you doin'? □

Inside story

This year's *Computer Decisions* Salary-Status Survey tapped the largest sample in the survey's five-year history. Abbott, Langer & Associates, a consulting firm, mailed forms to 20,007 MIS/dp managers in 50 states and Puerto Rico. Each recipient received a personal questionnaire—which solicited answers to questions on working situation, status, compensation, and benefits—and a survey data sheet, which requested salary data on managers and staff members.

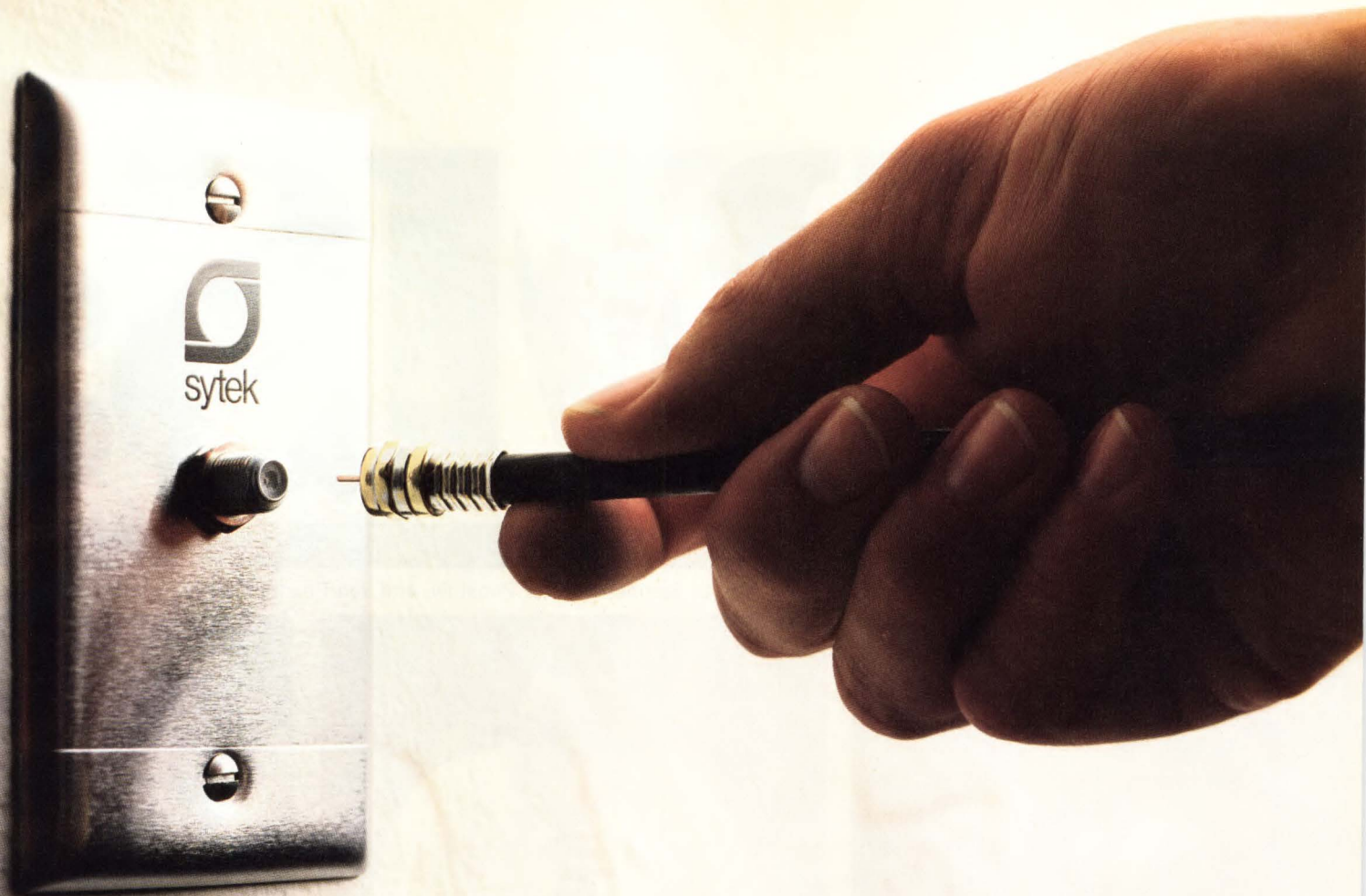
The responses included 1,529

personal questionnaires and 1,362 survey data sheets. In total, respondents sent salary figures on 14,000 positions, categorized under 35 job labels. The businesses and institutions represented reflected the actual mix of workplaces for *Computer Decisions* readers. Results were compiled on an Amdahl 470 V-8 mainframe.

Abbott, Langer & Associates mailed the questionnaires in August 1983 to randomly selected MIS/dp managers and directors—who constituted 45 percent of *Computer*

Decisions' subscribers at that time. (The magazine's circulation then was 120,000; it has since risen to 160,000.) Recipients were asked to respond with data effective August 15.

The information presented in the article is but a small fraction of all data compiled. A complete report, entitled "Compensation in the MIS/dp field," is available for \$195 from Abbott, Langer & Associates, Department CD, 548 First St., Crete, IL 60417. The phone number is (312) 672-4200.



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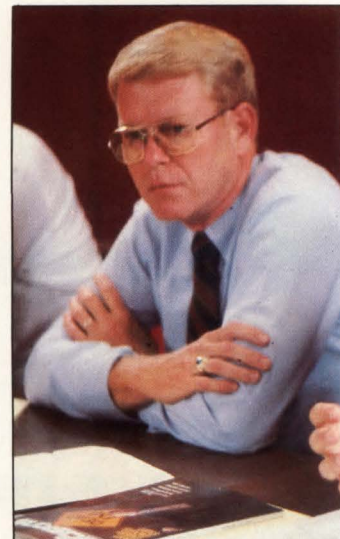
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DBMS:

First in the 1984 series of roundtables

Bud Hoose, Richard E. Schryver, John K. Lyon, Frank L. Stephens, Peter Puestow, and Jan Snyders (left to right) discuss the



Database management systems (DBMSs), developed by IBM to reduce data redundancy, have restructured the world of information management. By organizing data into a manageable framework, these systems let data-processing managers monitor the creation and use of data to maintain an accurate, up-to-date database.

Since DBMSs were introduced 15 years ago, the term "database management" has come to signify a lot more than organization, and the capabilities and popularity of DBMSs have grown accordingly. Thanks to increased user-friendliness, new database systems give nontechnical end users direct access to information. Database systems are also available to integrate the develop-

ment of all of an organization's programs and data. Other systems offer graphics and decision support, as well as the highly sought micro-to-mainframe connection. In 1982, corporations spent more than \$440 million on database products and, industry analysts predict, will spend nearly \$2 billion by 1988.

Yet, despite their promise, database management systems are having trouble keeping up with the great expectations of users and information professionals. The ideal distributed-database system has yet to be introduced, and the issues of data integrity and security remain unresolved. Managers are even questioning the practicality of spending so much money and effort to implement a DBMS. Computer Decisions invited experts who are testing the lim-

its of DBMSs in their organizations to discuss the benefits and limitations of the concept. (See accompanying box for list of participants' names and affiliations.)

Peter Puestow: Corporate decision-makers often shy away from converting departmental systems to integrated database facilities because they don't see how the cost savings and benefits offset the initial expense.

Eric Adler: Investments in DBMSs can appear risky. A typical payback curve runs negative at first, due to the heavy outlay for software, planning, organizing, hiring, and training. Once rolling, however, the DBMS begins to pay back. Politics can also seriously deter implementation—dp managers often discover that users don't like to share their data.

Lanny Russell: And managers

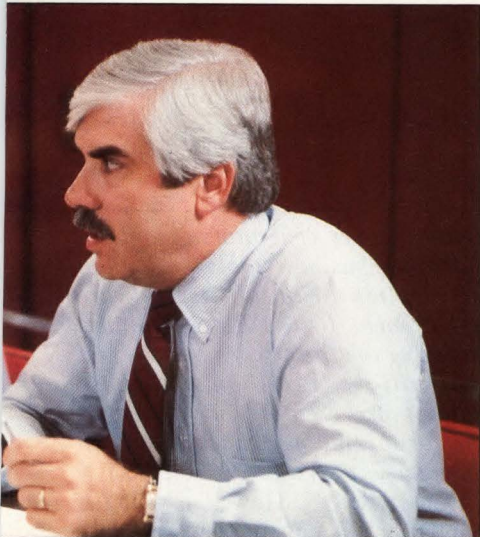
THE MORE YOU GET, THE MORE YOU WANT

Although database management systems have been in use for more than 15 years, managers are still frustrated with their limitations, and are demanding expanded capabilities.

by Jan Snyders, *Midwestern Editor*

problems and benefits of database management systems.

Photos by Terry Lee



don't relish the idea of hiring and training professionals to work with database systems. My company gradually switched from batch-oriented to real-time systems over the last 10 years, and we learned that most programmers and systems analysts are not experienced with DBMSs. Most are more familiar with sequential files.

Frank Stephens: The training required to orient staff to a DBMS scares a lot of managers. Corporations with large database systems must keep programmers on staff just to keep up with new releases and fixes. A lot of managers don't want to hire systems programmers, but find that applications programmers are more knowledgeable about batch than about database management systems.



Robert Walsh: A lot of dp managers aren't aware of the user benefits of database-management tools. Because they focus on bits and bytes instead of the productivity benefits for the inventory or marketing department, they fail to sell the concept effectively to top management.

Adler: Database management systems have been around for a long time, but they still represent an emerging technology. Users are just beginning to realize the potential advantages of tapping the computer's information. The concept of database management is growing, but its time has not yet come.

The evolution of database management systems will be propelled by relational systems, which are more user-friendly than the more complex hierarchical and network systems.



Relational systems are structured to let nontechnical managers and staff members access a database without the intervention of the data center. But performance is often sacrificed to achieve this user-friendliness, and managers should carefully weigh the benefits when comparing DBMS architectures.

Ron Stein: Relational databases have helped my end users develop databases that contain information relevant only to their departments. Most users don't have the time or the training to figure out all the data relationships for every department. Relational systems let users start small and expand their databases slowly. Ease of use is invaluable in a DBMS. End users should not have to spend a lot of time on the front end, figuring out technical details. (Cont)

DBMS Roundtable

(Continued from page 125)

Roundtable participants included (left to right) Eric S. Adler, Lanny Russell, Ronald A. Stein, Robert Walsh, and Richard E.



Bud Hoose: Ease of use also helps programmers who have been trained to handle sequential batch jobs. After all, a flat-file relational database is set up like a sequential flat-file system. Programmers can learn to use it faster than they can learn a hierarchical or network system.

Adler: Relational systems may be good for certain organizations, but features of network, hierarchical, and batch systems are preferable for others. True, relational systems are easy to understand, but they are hard to update and they require more storage capacity than other structures.

Stephens: Ease of use is not everything. Management seriously has to consider the size of a system, the resources available, and the system's storage capacity. My company's databases, for example, have up to 4 gigabytes of storage and loads that sometimes surpass 20 transactions a second per system—with several systems running concurrently. We are going to implement a relational system, but we have to overcome some real problems first. Our users need fast responses, and, with our giant databases, relational database systems can really slow down operations.

Walsh: At Schwinn, programmer productivity, not equipment performance, is the big issue. Management will buy all the iron in the world, but it won't spend another penny on a better programmer. Thanks to our relational system, a programmer who came on board one Monday morning had written two programs by Tuesday afternoon. He had never worked with the database's language before.

Solving business problems is one of the MIS department's critical responsibilities. It requires tools that are flexible, easy to use, and easy to modify. If I were out of memory, speed, and money, I might not buy a relational database; performance is not its major advantage—or our major requirement.

John Lyon: I don't consider relational and network systems mutually exclusive. Because different methods of processing are better suited to each structure, interfacing a network package like Cullinet's IDMS with a relational package like Information Builders' Focus provides the best of both worlds. My company uses two types of systems and enjoys dual benefits.

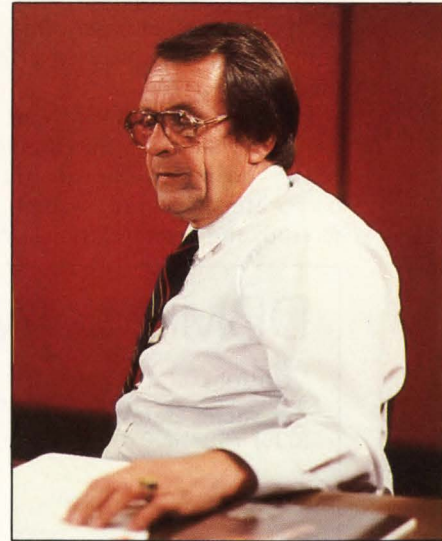
Foundation systems—which can

include report generators, graphics, and other business tools—allow an organization to tie all its software development to a DBMS. Rapidly becoming the framework of data and applications development, these systems are creating both benefits and problems for users and managers.

Hoose: Bell & Howell is using a foundation system for the same reasons it uses a flat-file relational DBMS: The system is easy to understand and develops applications quickly. But it's caused some problems. For example, we now use our computers' power 90 percent during the day and 30 percent at night—and we plan to implement even more on-line systems and information-center tools. Since running a DBMS on our computers during the day costs a lot more than running a batch system at night, our costs are going to skyrocket unless we find a way to transfer some of our transaction loads.

Foundation systems also require a lot more equipment. We have an IBM 370/158 and a 3033, but, because of the tremendous number of applications we have, we'll soon be replacing the /158 with either another 3033 or a 3083.

Schryver.



Puestow: Wehr Corp. has taken the idea of foundation systems a step further than most organizations. The president says our DBMS isn't a foundation for software development, it's a foundation for the running of our corporation. Each division needs valid, interrelated information that every user can access. If we don't have a good way to maintain our database, our users don't have the online-query and comprehensive information-retrieval facilities to make good decisions and increase profits.

Adler: DBMS is essential for providing the A.C. Nielsen TV ratings. As the television and cable industries grow, our users will want to manipulate our statistics to answer new questions. They want a tool to help them access our databases and create reports, and use ad hoc-query facilities. If we don't give it to them, they'll buy our data tapes and get some other vendor to produce their reports. We're a little cautious about foundation systems, however, because they'll tie us down to one vendor. We prefer to use different hardware vendors.

Walsh: A DBMS has to tie all systems together. Schwinn's goals in-

clude improving customer service, making quality bicycles, and increasing profits. To accomplish all this, we need integrated inventory, personnel, payroll, and bill-of-material information. Before we had such a system, clerks copied data off printouts and retyped and re-edited

them. By the time a manager completed an analysis, a business opportunity had passed or a problem had become so bad it required drastic measures.

We selected Software AG's Adabas and Natural packages. By integrating the inventory, sales-manage-

Roundtable participants

Moderator: Jan Snyders, midwestern editor, assisted by Mel Mandell, editor, *Computer Decisions*.

Eric S. Adler, director, production research, A.C. Nielsen Co., Dunedin, FL. (Computer Corp. of America)

L. R. (Bud) Hoose, project manager, applications technical support, Bell & Howell, Chicago. (Applied Data Research)

John K. Lyon, manager, software technology, General Electric, Bridgeport, CT. (Information Builders)

Peter Puestow, manager, data processing, Wehr, Milwaukee. (Cincom Syst.)

Lanny Russell, information center administrator, General Telephone Co. of Florida, Tampa. (Mathematica Products Group)

Richard E. Schryver, vice president, U.S. data management and systems, Manpower International, Milwaukee. (Tominy)

Ronald A. Stein, systems officer, Harris Trust and Savings Bank, Chicago. (Software House)

Frank L. Stephens, senior consultant, database management, McDonnell Douglas Automation, St. Louis. (Intel)

Robert Walsh, manager, management information systems, Schwinn Bicycle, Chicago. (Software AG of North America)

The vendor of the DBMS used by each participant is in parentheses.

DBMS Roundtable

(Continued from page 127)

ment, general-ledger, and personnel systems, we can begin to produce applications and data for all our users. And, as memory, power, and disk capacity become cheaper, this system will be the only way to effectively meet our goals.

Lyon: Using the DBMS as a foundation for software development has really helped General Electric's corporate-sponsored system handle payroll/employee relations. Without

the application-development facilities of Cullinet's IDMS and Ads-On-Line packages, we would have had a tremendous applications backlog. Also, because most tools solve only one problem at a time, we wouldn't have had enough time in a day to process all our applications on sequential files. But our DBMS lets us use Information Builder's Focus to solve one problem, Ads-On-Line to develop the transaction processor,

and report writers to attack the rest of the work.

Russell: We all have to deal with the problem of end users developing programs on foundation systems. Now, when users move to another department or leave the company while developing critical applications, the burden of picking up where they leave off falls to the information-management staff. Users are going to have to assume some of the responsi-

DBMS software

Vendor	Package	Requirements	Price	Circle
Advanced Data Mgt. (609) 799-4600	DRS	IBM 370, 43XX, 30XX DEC VAX DEC PDP-11/23 to /70	\$60,000 to \$96,000 \$15,000 to \$52,000 \$15,000 to \$40,000	420
Amcor Computer (502) 491-9820	Ambase	DEC PDP-11 DEC VAX	\$29,000 \$34,000	421
Anistics (415) 965-9912	Aris	DEC System 20	\$50,000	422
Applied Data Research (201) 874-9000	Datcom/DB	IBM 4321, 4331, 370/115, /125, /135, /138, and PCMs IBM 370, 43XX, 30XX	\$44,700 \$59,600/DOS \$76,700/OS and CMS	423
	ADR/PC Datcom	IBM PC and XT	\$12,000 plus \$495/micro	
	ADR/Data	DEC Pro 300	\$600	
Battelle Software (614) 424-6424	Basis	DEC VAX, S/10 and /20; IBM 370, 30XX, 43XX, under VM and MOS; Prime; Wang VS; Control Data Cyber and 600; Sperry 1100	\$26,000 and up	424
	Basis-DM	DEC VAX	\$29,000	
Cincom Syst. (513) 662-2300	Total	IBM 360 and up, and PCMs	\$59,400/DOS \$79,500/OS	425
	TIS	IBM 370 and up	\$200,000 to \$300,000	
	Ultra	DEC VAX-11/730 DEC VAX-11/750 DEC VAX-11/780 to /782	\$49,400 \$64,900 \$74,900	
Computer Assoc. (516) 333-6700	CA-Universe	IBM 360, 370, 43XX, 30XX under DOS, OS, CMS	\$110,000 to \$125,000	426
Computer Corp. of America (617) 492-8860	Model 204	IBM mainframes and PCMs	\$150,000/DOS \$195,000/CMS \$235,000/OS	427
Computer Sciences (213) 615-0311	Manage	Sperry 1180/81 (timesharing)	Based on fee for Infonet	428

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DBMS Roundtable

(Continued from page 128)

bility that comes with their new power.

Richard Schryver: One of information management's major problems is users who think that because the company has a DBMS, every application should be real-time, or inter-

active. The most difficult job I have is explaining the difference between applications that should be interactive and those that should be done overnight. How often do users really need information the second it's generated? Companies can't afford to

work that way all the time.

The problems of end users revolve around the issue of data normalization. Some experts claim setting up the database so that each datum has the same meaning for

(Continued on page 134)

DBMS software

Vendor	Package	Requirements	Price	Circle
Comshare (313) 994-4800	Questor	Commander II (timesharing)	Based on usage	429
Contel Information Syst. (301) 654-9120	RTFile	DEC micros and minis	\$1,500 to \$8,500	430
CRI (408) 980-9898	Relate/3000 I	HP 3000 series	\$9,950	431
	Relate/3000 II	Same system	\$18,500	
Cullinet Software (617) 329-7700	IDMS	IBM 360, 370, 43XX, 30XX, PCMs under OS/MFT, VS1, VS2 (SVS, MVS, DOS/VS, VSE)	\$100,000 to \$250,000	432
	IDMS/R	Same systems	\$55,000	
Cytrol (612) 835-4884	CYX-DB	DEC PDP-11	\$17,000	433
		DEC VAX	\$25,000	
Database Syst. (602) 265-5968	Transact Facts	DEC VAX; Prime	\$12,500	434
		Prime	\$15,000	
Duquesne Syst. (412) 323-2600	QCM	IBM 370 and PCMs under MVS/BFI	\$14,000/performance monitor	435
			\$6,000/performance integrator	
Economic Sciences (415) 841-6869	EMS	IBM 4331-2 and up; PCMs	\$6,000/performance module	436
			\$6,000/performance database	
Exact Syst. (914) 273-8100	DNA	Data General under AOS/VS, AOS, RDOS	\$6,000/job analysis and billing	437
			\$50,000 to \$125,000	
GE Information Svcs. (301) 340-4000	The MIMS System	IBM mainframes	\$2,000 to \$63,000	438
Henco Software (617) 890-8670	Info	IBM mainframes under VM/CMS	\$100,000 and up/license	439
		Prime 50 series; DEC VAX; Harris 100 series; Honeywell DPS 6; IBM mainframes under VM/CMS	\$9,800 to \$30,000	
Infodata Syst. (703) 578-3430	Inquire	IBM 370, 43XX, 30XX, PCMs under MVS, VS1, and VM/CMS	\$55,000 and up	440

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Best of all, System 1032 is fast and pretty. It answers complex queries almost instantly and produces presentation-quality reports with single commands.

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Don't think it's a toy, though. Sophisticated applications designers can

program in any VAX language, including System 1032's built-in block-structured language, and still access all of System 1032's powerful data management tools. A complete range of data types, format definitions, shared data structures, and other advanced features ensure that System 1032 easily satisfies the most demanding needs.

If you're a manager, you'll especially appreciate System 1032. Your users and programmers all use the same unified command language and data base concepts, so communication between them is easier than ever. And System 1032's careful human engineering drastically cuts your training costs and increases productivity.

Plus we exploit the best of the VAX architecture with shareable native code, asynchronous I/O, and propri-

etary inverted files—efficiently! So, unlike other software, System 1032 won't force you to buy more memory, disk space, or CPUs.

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* The Top Ten Contest ad which appeared in January *Computer Decisions* inaccurately stated that free reruns would be given to winning advertisers. NO free reruns will be awarded; advertisers may, however, enter the advertiser Top Ten Contest to become eligible for the top five prizes listed above.



DBMS Roundtable

(Continued from page 130)

each user is the only way to satisfy the data-processing department and maintain the flexibility needed to meet ad hoc user needs. Others believe normalization is unnecessary.

Stephens: When McDonnell Douglas started using Intel's System 2000 about five years ago, management had to look hard at the issue of flexibility. We found that if the data-

base is accessed by a programming language, we can sacrifice normalization and increase processing and storage efficiency. But if users try to access the same data with an ad hoc language, the integrity of the database can suffer; the data repeated in different programs will have a different meaning each time they're called up.

Puestow: The processing efficiency of normalized relational databases has to improve. Cincom Systems has addressed this problem in its recent software releases, but users' data still need to be normalized for batch updates. We'll have to return to the get-a-record, get-a-file techniques.

Lyon: Normalization doesn't solve

(Continued on page 138)

DBMS software				
Vendor	Package	Requirements	Price	Circle
Information Builders (212) 736-4433	Focus	IBM 370, 43XX, PCMs under VM/CMS, MVS/TSO, VS1 IBM PC XT	\$66,000 \$1,595/unit \$8,400/eight units	441
Intel (512) 258-5171	System 2000	IBM, Sperry, Control Data mainframes	\$40,000 and up	442
Interactive Tech. (503) 644-0111	RDM	DEC PDP-11 under RT-11, RSX, RSTS/E DEC VAX under VMS	\$2,495 \$4,795	443
	RDM 300	DEC Pro 350	\$995	
Logica (212) 599-0828	Rapport	Amdahl under VM/CMS; Burroughs under MCP-3; Control Data under NOS; DEC VAX; Data General; Harris Vulcan; Honeywell under GCOS; IBM under MVS/TSO, VM/CMS; Sperry	\$16,000 to \$55,000	444
Logical Software (617) 864-0137	Logix	DEC PDP-11 and micros	\$3,000	445
Mathematica (609) 799-2600	Ramis II	IBM 360, 370, 43XX, 30XX, PCMs under DOS/VSE, VS, MVS, VM/CMS	\$40,000 to \$80,000	446
		IBM PC XT 370	\$1,395	
National Information Syst. (408) 257-7700	Accent R	DEC S/10, /20, VAX	\$40,000 and up	447
Oracle (415) 854-7350	Oracle	DEC PDP-11/23	\$12,000	448
		DEC PDP-11/24 to /44. VAX-11/730	\$24,000	
		DEC PDP-11/60 to /70, VAX-11/750 to /782; IBM 4321, 4331, 370/138 to /148	\$48,000	
		IBM 4341, 370/158	\$72,000	
		IBM 303X to 308X, and 370/168	\$96,000	
Peregrine Syst. (714) 855-3923	Falcon	IBM under MVS	\$60,000 to \$90,000	449
		Any system under Unix	\$15,000 to \$30,000	
		IBM PC	\$1,000	

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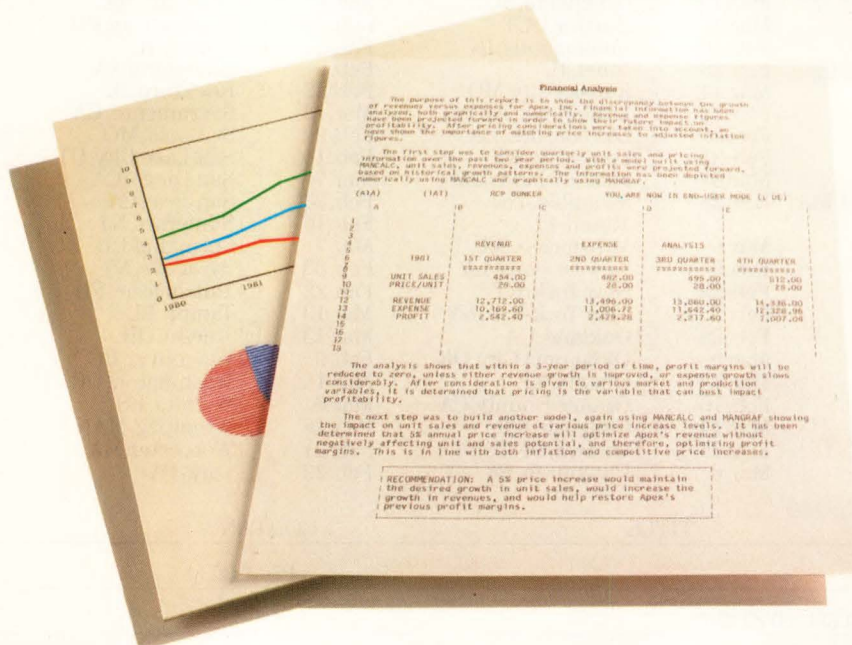
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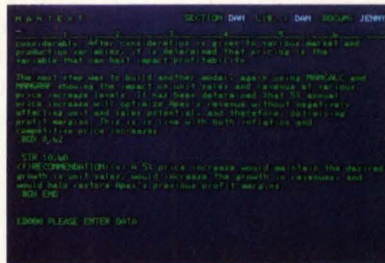
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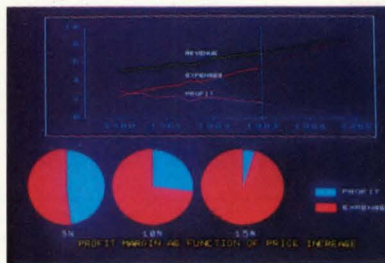
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DBMS Roundtable

(Continued from page 134)

all problems. If programmers are using one field for several purposes and giving that field more than one name, normalization won't help restore data integrity. If a programmer leaves an organization, any undocumented program—normalized or not—is going to mean something different each time it's used.

Another myth is that if data are

not normalized for batch, they will be read incorrectly by online users; working with network systems, using IBM's IDS and Cullinet's IDMS, I've found that one database can support both batch and online processing. Problems only occur when you begin to replicate fields. It's useful to consider normalization simply good database design, but you cer-

tainly can support it without formal flat files or relational files. You can support ad hoc query and production in the same way.

A lot of new practices are surfacing along with database management systems. One of them, decision-support systems, is coming to the forefront. How much decision-

(Continued on page 142)

DBMS software

Vendor	Package	Requirements	Price	Circle
Professional Computer Resources (312) 932-2200	Factfinder	IBM S/34	\$2,995	450
	RMS Query	IBM S/38	\$8,000	
Relational Database Syst. (415) 424-1300	Informix	Any system under Unix	\$1,600	451
Relational Tech. (415) 845-1700	Ingress	DEC VAX-11/730	\$40,000	452
		DEC VAX-11/750 to /780	\$20,000	
Rexcom (713) 464-8268	Rexcom D	Prime and Harris	\$34,000	453
	Rexcom E	Same systems	\$18,000	
Ruf (913) 782-8544	Imprs	DEC Pro 325, 350, PDP-11, VAX	\$1,000 to \$20,000	454
Scientific Information (312) 475-2314	SIR/DBMS	Apollo; Control Data Cyber; Cray; Data General; DEC VAX, S/10, /20; Gould SEL; HP 9000; Honeywell; IBM; ICL; Perkin-Elmer; Prime; Siemens; Sperry 1100 and 90	\$18,000 to \$34,000	455
Signal Tech. (805) 683-3771	Omnibase	DEC VAX under VMX	\$17,000 to \$40,000	456
Software AG (703) 860-5050	Adabas	IBM 370, 43XX, 30XX, PCMs	\$106,000 and up	457
Software House (617) 661-9440	System 1022	DEC PDP-11, S/10 and /20	\$15,700 to \$65,000	458
	System 1032	DEC VAX under VMS	\$7,000 to \$40,000	
Systemhouse (703) 276-0500	Minisis	HP 3000	\$50,000	459
Tominy (513) 984-6605	Data Base Plus	IBM 370, 43XX, 30XX	\$39,000 to \$49,000	460
		IBM S/34, /36; Series 1	\$19,500 to \$24,500	
		IBM PC and XT	\$5,850 to \$7,350	
United Information Svcs. (215) 568-2424	Seed	DEC VAX, PDP-11, S/10 and /20; Prime 50; Perkin-Elmer 3200; IBM 370, 43XX, 30XX, PC	\$15,000 to \$95,000	461
United Software Syst. (213) 556-0664	Clio	IBM S/370, 43XX, 30XX, PCMs; DEC VAX	\$80,000/OS \$70,000/DOS	462

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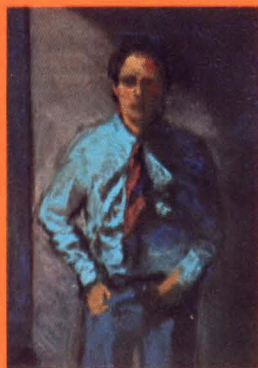
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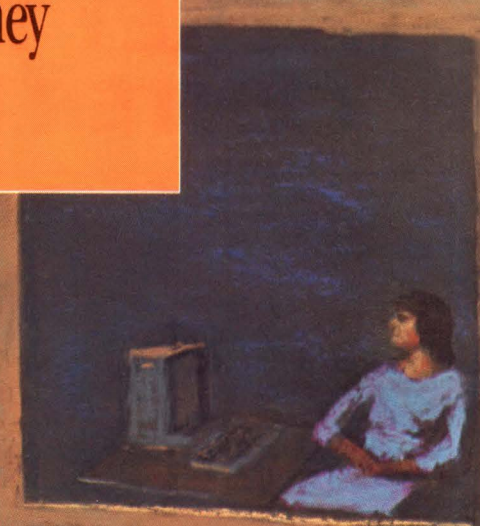
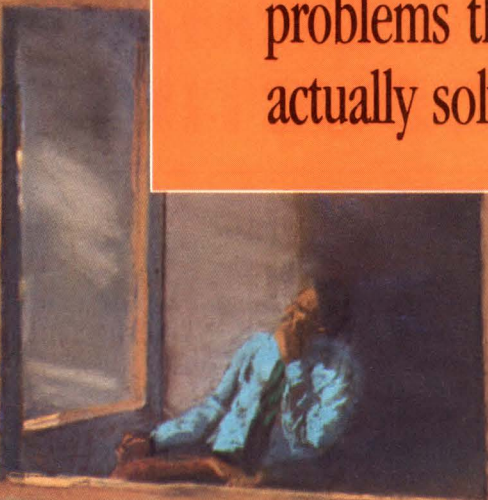
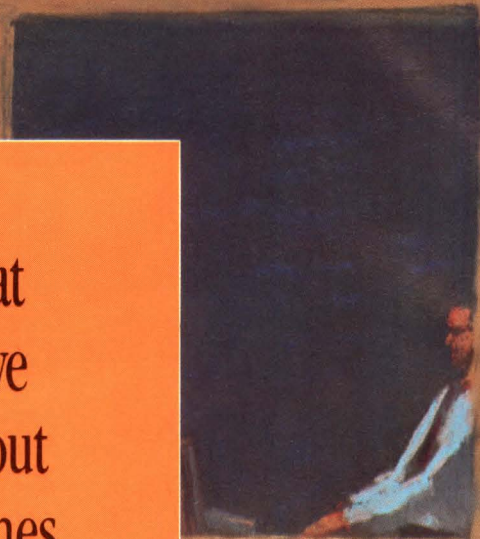
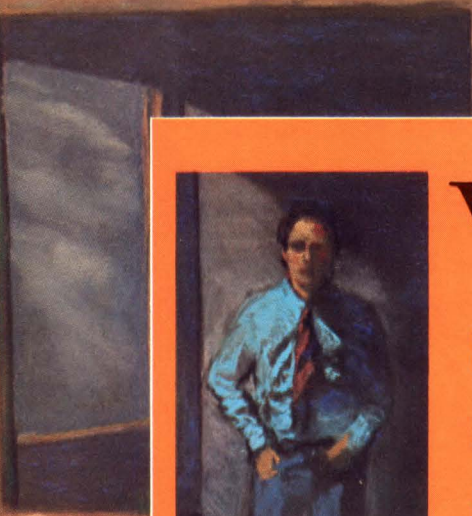
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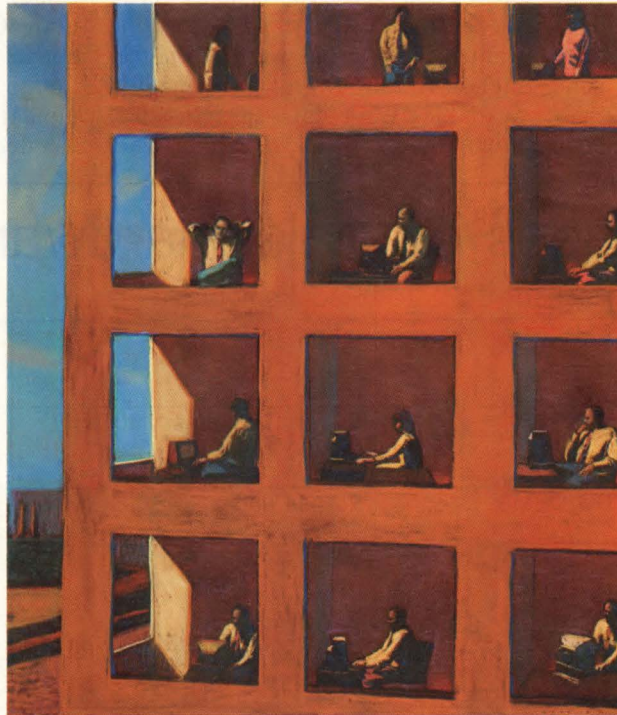
Initially, four applications are available: Visi On Word,™ Visi On Calc,™ Visi On Graph,™ and Visi On Query.™ Totally redefined for the Visi On environment, each application includes features and functions that have dramatically improved performance.

Even more impressive, their strength is actually boosted when these applications are *combined*. Making maximum use of multiple electronic windows and a mouse, Visi On instantly

transfers data between applications, demonstrating depth of integration to an unprecedented degree. Instead of doing just one job at a time, the user may move from project to project, backed up always by the full power of the machine.

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Indeed, for MIS managers as well as for users, Visi On is a virtually instantaneous remedy for the problems experienced with personal computers.

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(Which also makes Visi On your simple-to-implement solution for standardizing systems and applications.)

On the off-chance a problem should befall a user, no problem. Each Visi On

application program comes with the equivalent of 100 pages of Help text users may call on when there is a question. The more help the user gets from Visi On, the fewer the calls for help that come into your department.

The Visi On system also provides the basis for a complete package of communications programs. With applications software soon available, Visi On will allow personal computers to emulate both asynchronous and synchronous terminals.

And, Visi On will allow integration into local networks.

*And more. And more.
And more.*

Additionally, Visi On is open-ended. New applications, new capabilities, and new peripherals will be added. Plus, Visi On architecture is open to all developers, with a Visi On Toolkit to help you custom design your own applications programs.

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DBMS Roundtable

(Continued from page 138)

support activity is actually going on, and what are the problems of setting up these systems?

Puestow: Back in 1978, the president of Wehr Corp. decided to implement computer systems and databases that would eventually become tools for accessing timely information to help users make better business decisions. It took until 1981 to create the databases and to develop some online inquiry programs. In 1982, migration started from Cincom's Series

80 Total to its Total Information System (TIS), which has query, comprehensive-retrieval, and report-writer facilities.

The president's objective was to teach all our users, including the general manager and chairman of the board, how to use the systems to run the business. At the very least, he wanted them to be aware of the tremendous amount of information available. With data so accessible, users could offload their data from

manual files to computer systems and share them with everybody. The improved databases and query facilities have helped change Wehr's \$250,000 monthly losses to about \$300,000 monthly profits.

Hoose: We started an information center a few years ago with more than 400 Apple IIs and a query language that lets users select information to key into their Apples and manipulate. Around the middle of 1982, we decided to obtain some infor-

DBMS packages of major hardware vendors

Vendor	Package	Requirements	Price	Circle
Burroughs (313) 972-7000	DMS II	B1000 to B7000 B7900	\$15,300 to \$33,625 \$1,200/mo.	469
Control Data (612) 853-8744	DMS-170	Cyber 170 series, Model 800 under NOS version 2	\$13,500 to \$105,200	470
Data General (617) 366-8911	DG/DBMS	Eclipse under AOS and AOS/VS	\$10,495 AOS \$19,000 AOS/VS	471
Digital Equipment (617) 897-5111	VAX-11 DBMS	VAX-11/750, /780	\$20,000	472
	DBMS-11	PDP-11/24, /44, /70	\$20,000	
	DBMS-10, -20	DEC S/10, /20	\$34,500	
	VAX-11 DBMS	VAX-11/750, /780	\$12,000	
	DBMS-11	PDP-11/24, /44, /70	\$10,000	
Hewlett-Packard (408) 725-8111	Image/3000	HP 3000	\$3,000 to \$5,000	473
Honeywell (617) 895-6000	DM-IV	Honeywell Level 66 DPS, DPS 8, DPS 88	\$1,041/mo. and up	474
IBM (914) 696-1900	IMS/VS	IBM 370 except /115, /125; 43XX; 30XX under OS, VS1, MVS	\$1,535/mo.	475
	DL/1 DOS/VS	IBM 4321 and up	\$372/mo.	
	SQL/DS	IBM 30XX, 4331 Model 11, and up	\$406/mo.	
NCR (513) 445-5000	Tower Relational DBMS	NCR Tower 1632	\$895	476
	ITX/DBS	NCR 9300	\$6,770	
	Cincom Total-Basic	NCR V	\$31,350	
	Cincom Total-Series 80	NCR V	\$36,000	
Prime Computer (617) 655-8000	DBMS	All Prime 50	\$15,000 to \$34,000	477
Sperry (215) 542-4011	UDS 1100	Sperry Series 1100	\$1,050 to \$1,200/mo.	478
	RDMS 1100	Same systems	\$750 to \$1,500/mo.	
Tandem Computer (408) 725-6000	Encompass	Tandem Nonstop I+, Nonstop II, Nonstop TXP	\$8,000	479

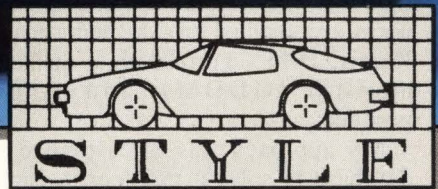
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And for graphics, the Datasouth DS220 adds high performance style to popular microcomputer applications programs through high resolution dot

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DBMS Roundtable

(Continued from page 142)

mation-center tools. Surprisingly, we didn't have to sell these tools to our end users. They started coming to the dp department and asking that we put their personal databases on the mainframe so they can use their Apples as IBM 3270 terminals.

We are playing the game backwards. While other companies are introducing users to information-center tools and worrying about getting the data from the mainframe to the personal computers, we are keying information into the mainframe from reports created on users' personal computers. We are replacing the query feature with an automated approach. Now the users directly access the mainframe's files.

Russell: My company started considering decision support and the information-center concept more than two years ago. Now 250 to 300 users are trained in Mathematica's Ramis, IBM's graphic data-display monitor (GDDM), and other products.

My approach was to customize a database to solve a problem in each department. Once the departmental

database was built, teaching users the query language was easy. Users who quickly learned to operate the database achieved benefits right away. Another advantage to this method is that when an employee sees a peer effectively using the DBMS, he or she can't complain it doesn't work.

Schryver: While most managers

"How do you stop someone from leaving sensitive information on a personal computer?"

Lyon, General Electric

talk about training users, managers at Manpower International talk about training dp professionals. The officers believe the data center is there to support them. The professionals need to know what to give users and how to give it to them. If you train the dp staff, you don't have to train the users.

We started out selling an interna-

tional corporate financial database of worldwide sales figures. With offices in 32 countries, we have to turn out financial reports quickly. We developed additional databases to handle our workforce, customers, receivables, and associated systems. When we started, even our supertechnical data-processing staff, for the most part, did not have any database-management experience. Now, I feel comfortable with our system. It's cost-efficient because equipment costs continue to drop as prices for personnel continue to skyrocket.

The concept of distributed database management systems—packages that control and find data in all a corporation's mainframes—is one of the most intriguing subjects in information management. Vendors are struggling to develop the distributed software required to turn that concept into reality. Many claim they already have a distributed DBMS, but the roundtable participants disagree.

Stephens: The problem with a distributed DBMS is the amount of control you must turn over to it, and the

Database-management machines

Vendor	Package	Equipment	Price	Circle
Amperif (213) 998-7666	RDM 1100	Interfaces with Sperry 1100	\$280,000	463
Britton Lee (408) 378-7000	IDM 500/0	Interfaces with IBM under VM/CMS, and PC; DEC under VMS, RSX; and systems under Unix	\$45,000	464
	IDM 500/1	Same systems	\$69,500	
	IDM 500/2	Same systems	\$99,500	
Corem Int'l. (703) 473-8105	Synfobase	Interfaces with IBM PC, Onyx, systems under Unix, DEC VAX under VMS	\$115,600	465
HDR Syst. (402) 399-1400	Noah	Interfaces with IBM PC, Onyx, Unix-based systems, DEC VAX under VMS	\$19,500 to \$40,000	466
Intel (512) 258-5171	IDIS 86/735	Interfaces with IBM, Sperry, Control Data	\$19,500 to \$40,000	467
Mega/Net (201) 825-7770	Mega/Net	Interfaces with IBM 360, 370, 43XX; Ethernet and X.25 networks; DEC VAX, PDP-11	\$19,900	468



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DBMS Roundtable

(Continued from page 144)

demands created on the central processing units (cpus). If you try to jump from cpu to cpu in a specific sequence to find a group of data, and if one of those computers is down, what happens? Can you request the system to leapfrog onto the next cpu, or does it have to stop? And if it stops, then what? I don't think a truly distributed DBMS is necessary. If you get involved with one, you have to be willing to invest heavily in hardware and software, and I don't know if you would get a return on your investment.

Lyon: There really isn't a commercially available distributed DBMS smart enough to find data. For instance, to find a particular model number for a product, you have got to know which part of the computer contains that number. Even if you set up the database in a daisy-chain order and instruct the computer to move from file to file to find the number, you still can't tell if you've completed the cycle and searched all the files. With a truly distributed DBMS, the computer should be able to tell you where it is searching, where it has searched, and if it has found anything. I don't think any product can do that.

Hoose: ADR claims it has a distributed system. The vendor calls it an umbrella; you can run it on one machine, and it will find data on another machine, as long as it's an IBM 4300 or 303X series. ADR claims it works. But we didn't purchase it.

Stephens: Intel mentioned one, but I don't know if it's off the ground.

Walsh: I read an ad for Software AG's Net-Work, which runs under VM with VTAM and SNA architecture and stores data at various points along the nodes. The ad says it works.

Schryver: Tominy has one, but it can't bounce from one database to another and search for information across different machines.

Puestow: Cincom claims its product does everything. It finds a file and pinpoints the requested information's position within the file, at a particular node in the telecommunications network. The user has to get the information himself. Cincom is trying to get its directory to talk to both its own DBMS and to sequential and dumb files. I think a lot of other vendors want to do the same thing.

Increasingly, users are demanding access to mainframe databases via personal computers. And efforts to develop a DBMS package that al-

lows the dp department to control the problems of the mainframe connection have not been entirely successful. Although DBMS vendors are offering micro-mainframe connections, companies that use them demand improvements.

Adler: Computer Corp. of America is planning to interface its Model 204 mainframe package to personal computers, but in the meantime, we've developed our own micro-mainframe connection. About 20 users download from our databases to their personal computers, but it's still hard to control the use of that data. There are a lot of problems to be worked out, but the users consider the capability a tremendous advantage.

Lyon: We use an early release of PC Focus. Although we're haunted by the usual specters of data security and corruption, we've had a hard time policing our users. How do you stop someone from leaving sensitive information on a personal computer? It's like trying to stop someone from leaving a sensitive report uncovered on his or her desk.

Stephens: When you give a user a personal computer, you should provide the download and query capabil-

(Continued on page 144H)

DBMS aids

Vendor	Package	Requirements	Price	Circle
Boole & Babbage (408) 735-9550	CMF/PDS	IBM 370, 43XX, 30XX under OS	\$50,700	480
Candle (213) 207-1400	Omegamon/IMS	IBM 370, 43XX, 30XX, PCMs	\$19,500	481
	Dexan/IMS	Same systems	\$19,500	
	RTA/IMS		\$9,500	
Database Design (313) 971-5363	Information Planner	IBM 360, 370, 43XX, 30XX; DEC VAX	\$30,900	482
Leemah (415) 434-3780	Secure Access Unit	All minis and micros	\$1,195	483
	Secure Access Multiport	All mainframes	\$500/port	
On-Line Software Int'l. (201) 592-0009	Executrieve	IBM S/34, /36; Datapoint	\$8,500	484
	Datavantage	IBM under IMS/DB/DC or CICS DL/1	\$25,000	
TSI Int'l. (203) 853-2884	Facets	IBM 43XX and up	\$15,000 to \$30,000	485



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Shielding computers from mishaps: This two-part article highlights power-protection equipment for mainframes, minis, and personal computers.

Salary-status survey, part II: How much are you getting in your "hidden pay"? This survey of benefits distribution will show how your package stacks up.

Meeting the pay-equity challenge: Not only is it fair to your employees, it is also to your benefit as a manager to see that all receive equal pay for comparable worth.

PABX—Working with analog, wishing for digital: Though digital PABXs are the definite trend for the future, you can

still get productive use out of your old analog system.

Input devices for your personal computer: There's a large array of devices, like the mouse and the touch screen, that may make working on your personal computer even simpler than a mere push of a button.

Raising programming productivity: Increasing productivity doesn't necessarily mean working harder, but it does mean working smarter.

1984 Teleprinter guide: The annual listing of the major suppliers of teleprinters, along with the characteristics of their products.

In March *Computer Decisions*

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DBMS Roundtable

(Continued from page 144B)

ities, and hope the personal computer has a lot of tools for using data productively. The biggest problem in my company occurs when users want to update the mainframe copy of the database. What do you do then?

If users start updating copies of the mainframe database on their micros, they'll get incompatible data, and eventually they'll distrust all information in the database. Your best solution to this problem is a pass-through feature that holds updated information in the mainframe before sending it to the database. End users will have to understand that if they update data in the afternoon, the new information won't be processed until the evening, and they'll have to wait until the next morning to get a current copy of the database.

Adler: A.C. Nielsen is about to implement a corporate-wide system that will provide the time and date of the transaction, an authorization number, and the name of the employee responsible for the data's accuracy for each download. The mainframe also has an audit mechanism that tells me who pulled which data when. Right now, that's the best we can do.

Some vendors of the more sophisticated database management systems for personal computers

claim they match mainframe database systems feature for feature. Is this a fact? Do users anticipate that DBMSs on personal computers will replace DBMSs on mainframes?

Russell: For security reasons, corporations will never replace the mainframe versions of their DBMS. They have to maintain data integrity. But micro versions will match their mainframe counterparts feature for feature. Within a year or two, micro DBMSs will have the power and storage required for mainframes. The 100-megabyte local-area network, which would tie all these micros together, possibly is already here.

Adler: I agree. I've been involved in a number of micro-database systems and am looking at others. They are very powerful and, although many of them do not yet match mainframes feature for feature, there's no reason why they could not work as well as mainframe systems. But security is a problem when everybody in the finance department has his or her own personal computer with 25 copies of the same database. I don't think micro DBMSs will ever replace mainframe systems, but they're rapidly becoming an important tool.

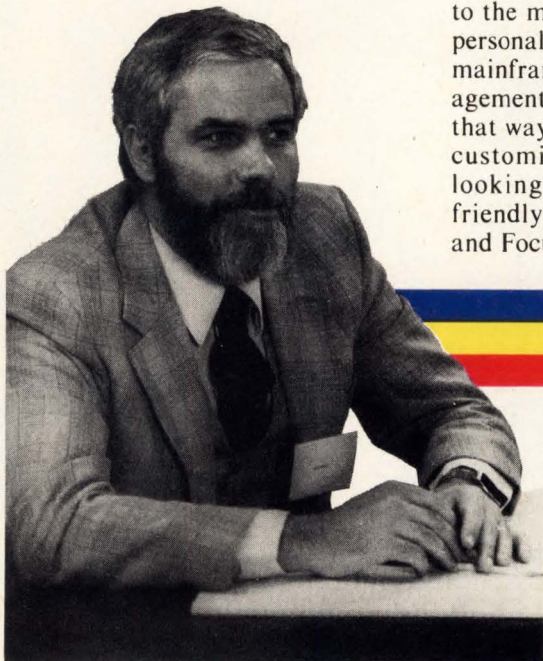
Lyon: I don't think the personal computer is going to replace the mainframe. The micro is an adjunct to the mainframe. If someone uses a personal computer to get data off the mainframe, it's either because management decided it's cheaper to do it that way or because the user plans to customize the data. We're overlooking the advantages of user-friendly languages such as Ramis and Focus that let users create proto-

types of the mainframe software on their micros and transfer the code to the mainframe. The micro may someday match the mainframe pound for pound, but it's not going to replace it.

Walsh: Part of the success of personal computers will be due to database management systems that make them programming tools for non-technical users. But micro-database systems will not replace mainframe systems, because in many ways a microcomputer is like an old IBM 1401. Replacing mainframes with personal computers is like going back to single-user systems that provide redundant information; it's like going back to nonsharing of corporate resources and low performance.

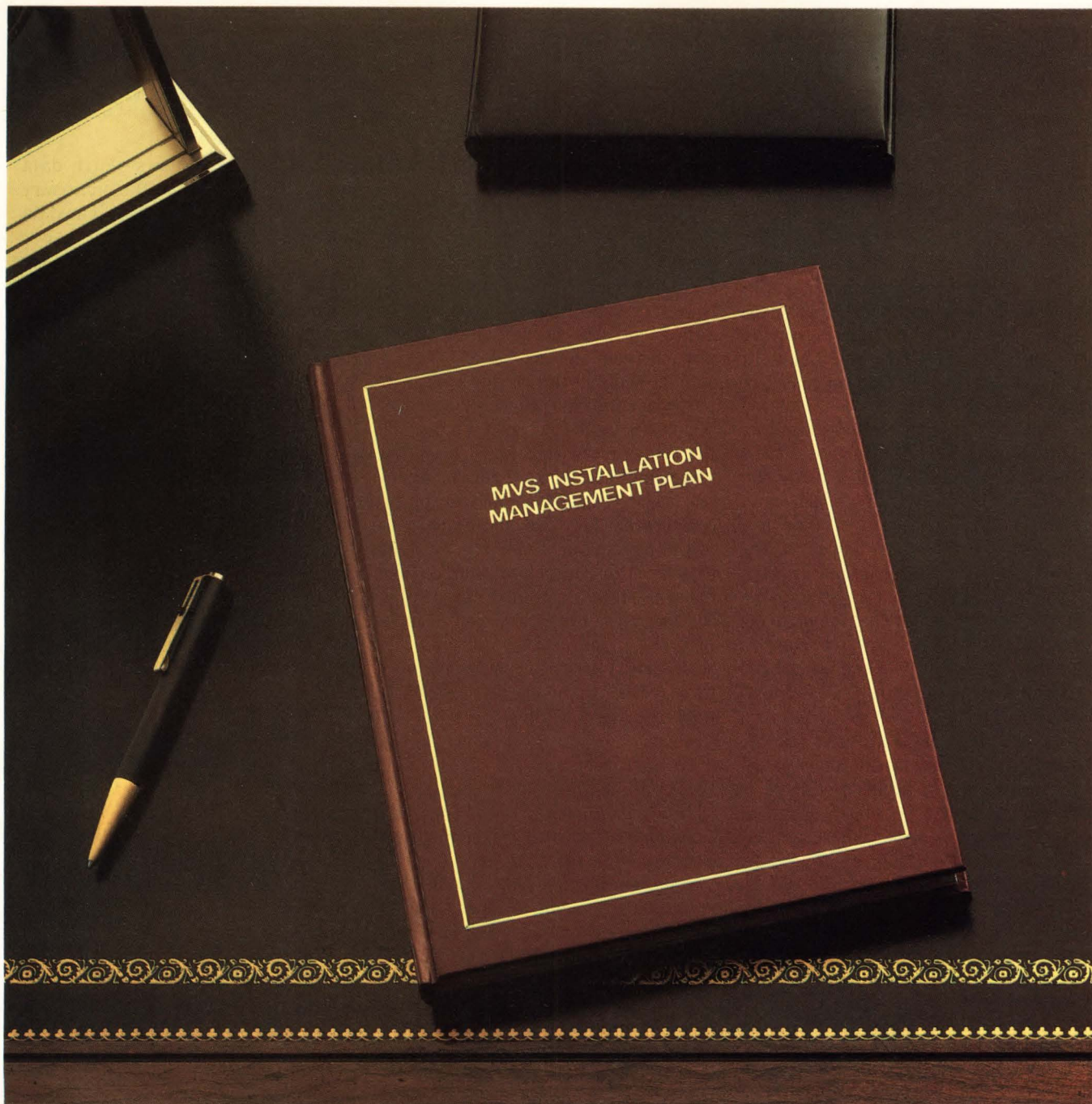
Puestow: The problem with users' developing databases on personal computers is that another person from a different department can't access the data until a link between personal computers and mainframes or between ad hoc languages is developed. When a user's ad hoc language and directory facilities can find requested information on both mainframes and personal computers, personal-computer database systems will come to the forefront. Until then, users in each department will continue to use different sets of information.

Graphics software is one of the fastest-growing software tools. Users claim it's easier to grasp analyses in chart and graph form than in rows and lists of numbers. Yet, despite its potential, graphics on DBMS is considered by many experts to be part of the fairly distant future. Users are



"Our users are requesting that we put their personal databases on the mainframe."

Hoose, Bell & Howell



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DBMS Roundtable

(Continued from page 144H)

beginning to show interest, but are not jumping into the water.

Stephens: Users at my company aren't working much with graphics and database management systems. So far, most of the demand for graphics comes from engineers and scientists. They've used graphics hardware before, but database management systems that provide graphics are quite new to them.

Adler: We've had problems finding an effective way to provide IBM's GDDM graphics package to our 600 users, who interactively pick up data on slow DECwriter or teletype terminals. We intend to download the data, and put the graphics package on users' personal computers. We haven't ruled out putting the package on the mainframe, but we have to find a way to get it to the users first.

Hoose: We've got GDDM and SASGraph, but use is relatively limited. We don't have an interface between our DBMS and either one of the products. I have been told one is being developed to boost usage of GDDM, but right now there's no effective way to print in-house the beautiful color graphs, produced by our IBM 3279 terminals. Nor does GDDM interface very well with any of our plotters. Handling graphics

has become the task of the MIS department.

Puestow: Graphics are also used at Wehr, but we find it cheaper to hire a clerk to plot dots and draw lines for \$3.50 an hour. We use our information-retrieval package to extract data, feed them through an interface, and put them on the GDDM. We can also download the data through a personal computer. But we have trouble producing hard copy. We replace the crt screen with a high-resolution screen and have the president's secretary take Polaroids of the graphics.

Schryver: How do you explain to top management, which pays millions of dollars for equipment, that you are going to stand in front of the display screen with a camera and take a picture?

Russell: We try to teach end users to be as self-sufficient as possible. If they want to develop slides from our 3279 terminals, they stand back, use a shroud, turn off the lights, and shoot. We don't do it for them.

When installing a database management system, every step, from assessing the needs of end users to assigning database and data administrators, is crucial to its success. A carefully thought-out plan can help you select the right vendor, install the system, and train users, while causing the least possible amount of disruption within the organization.

Adler: Before we discuss installation, we should clearly define the duties of database and data administrators. The database administrator is a technical expert who defines the files and codes the data-dictionary cards. The data administrator is the

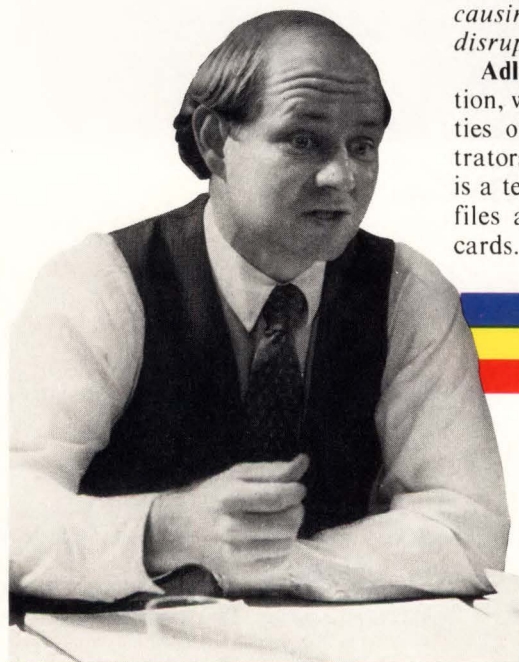
professional who knows which data need to be included in the dictionary and used for each database. The data administrator deals with the users. He or she knows all the data that are in the DBMS and how to find them.

Russell: When planning a DBMS for end users, start with their requirements. It's foolhardy just to pick a system and think users will endorse it. If you involve the users from the beginning, your chances of succeeding are much greater. Also, if you hire a data administrator before you install the system, the installation will be done a lot easier. Your last step—and probably your most important step—is to select your first group of users. You have to find employees who have interest and ability. Not everyone is going to be able to use the tools. Dp resources, like all other corporate resources, are limited. You want to apply them where you'll get the highest possible return.

Lyon: That plan is fine for end-user DBMSs. If you're going to install a shared-data system like IDMS, you'll find end users don't care about data integrity; they only care about using data for their own needs. In that case you have to plan to manage people as you would any other resource.

Walsh: Two years ago, we decided we had to do something about MIS productivity, and about providing the corporation with computer tools. We planned for a DBMS by looking at our tools, both our real and our hidden backlogs, and our business needs. We considered the future of dp and the decreasing cost of memory, and assessed our most critical needs. We

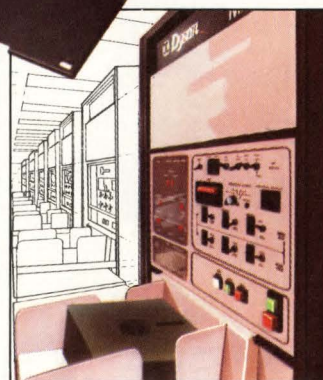
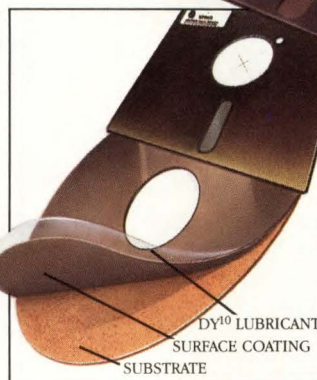
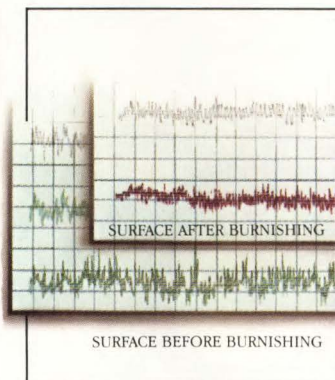
(Continued on page 182)



"We try to teach users to be as self-sufficient as possible."

Russell, General Telephone

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Corporate Portfolios



On Personal Computers

Personal computers simplify corporate—and personal—investment management, giving portfolio managers more time to make winning decisions.

by Donald R. Woodwell

The only thing that beats the thrill of victory is predicting who will be the winner—in sports or stocks. Personal computers are becoming the most popular aid for picking winners in corporate investment portfolios. Tens of thousands of portfolio managers are using the ubiquitous machines to make winning picks—or compensate for the inevitable losers.

Personal computers streamline virtually every aspect of portfolio management, including record-keeping, performance tracking, securities selection, and planning. For instance, the time-consuming, tedious side of portfolio management is the production of daily reports and file updates. Though unglamorous, daily repricing and reporting are essential to effective portfolio management.

In today's fast-moving markets, record-keeping inertia prevents managers from quickly responding to changing conditions.

Personal computers reduce these responsibilities to rote, automatic chores. For example, personal computers are adept at marking time-dependent issues, like options, bonds, futures, stock ex-dividends, and warrant exercises. The little machines automatically monitor the relevant dates, freeing portfolio

managers for the important and decidedly more glamorous side of their jobs: deciding which securities are winners in the bud and picking long-haul gainers.

Personal computers also help managers with complex analyses. Bonds and other debt securities, for instance, pose difficult challenges for portfolio managers. Deciding whether they are right for the corporate portfolio demands a complicated analysis of fundamental data on the issuing company, yield computations, quality analysis, and technical analysis of stock-market performance. Personal computers can help portfolio managers gather the requisite data, calculate expected yields, and manage debt securities after they're purchased.

How do personal computers do it? With the right software. Electronic spreadsheets are perhaps the most popular personal-computer programs among portfolio managers. These "calc" programs do away with much of the tedious analysis associated with portfolio management. They also help managers plan their next steps. Spreadsheet programs have many uses in portfolio management. For example, they can function as planning aids. A manager might set up the vertical column headings as

Portfolios On Personals

(Continued from page 149)

years and the horizontal rows as elements of potential profit. The manager can then estimate the annual return on an investment by a single element, such as long-term capital gains, dividends, interest, or some form of income. A single spreadsheet can be built for each type of security, commodity, property, option, and so on within the portfolio. Of course, it's up to the portfolio manager to make reasonable market judgments to project future earnings for each investment within the portfolio. (See Chart 1.)

Assume that a corporation's goal is to double the value of its portfolio in five years. A manager can tote up the bottom lines of individual spreadsheets for each portfolio component to get the estimated aggregates for the period. If the total return doesn't attain the corporation's goal, the portfolio manager can easily determine which of the individual profit contributors is likely to fail to produce its share of gains, and make adjustments. The portfolio model can be quickly recalculated based on these changes, and the affect on the aggregate gains is seen immediately.

General-interest spreadsheets were the precursors of software for more specific purposes in the banking and



securities industries. Today, there are more than 100 different personal-computer programs available for investment planning, market research, securities selection, and portfolio management. Most of the specialized packages (See accompanying sampler list.) run on Apple Computer models, but most of the new entries are being written for the IBM Personal Computer.

Gathering information

Many of the new programs operate in conjunction with "electronic libraries." These databases can replace the traditional corporate research staff and outside research services as the main sources of in-

vestment information. The electronic libraries are often called *information utilities*. Their service is providing information, whether it is complex financial data or news and sports.

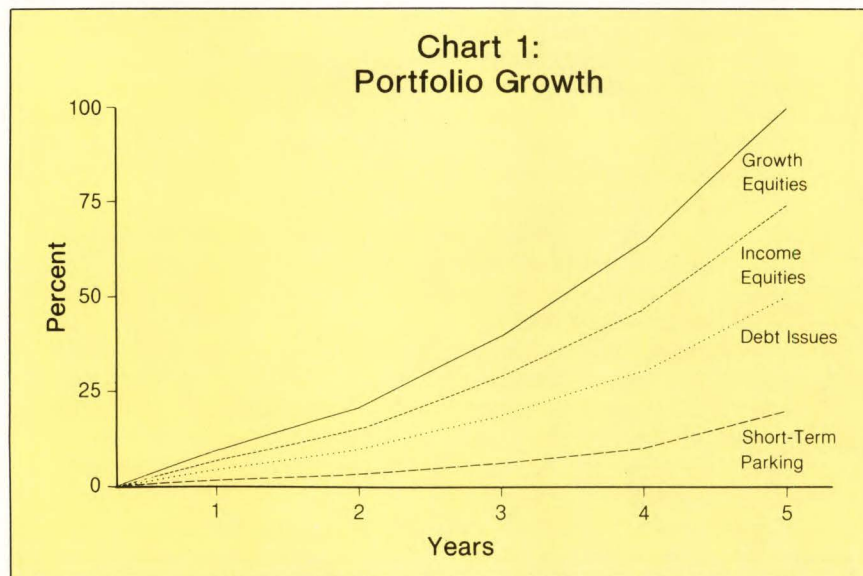
Many kinds of personal computers can be linked via telephone lines to dozens of databases containing financial and investment data. Sources such as the Dow Jones News/Retrieval Service, CompuServe, Data Resources Inc., and The Source make retrieval of a wide variety of data for comparisons easy. You'll need communications software and a modem to convert the analog impulses carried by the telephone lines into the digital language personal computers understand.

The utilities themselves display menus for the various databases they offer. Dow Jones, for example, has more than 20 databases, including Disclosure, a library of financial extracts from reports filed by public companies with the Securities and Exchange Commission; Corporate Earnings Estimator; Media General; and Forbes, a listing of comparative data on the top 1,000 corporations as defined by *Forbes* magazine.

Other options include sources of general business news, like United Press International, the wire service; *The Wall Street Journal*; and *Baron's*. Money managers can call up news stories about current events that affect the securities of corporations in specific industries.

A crop failure, for instance, may affect the commodity portion of a high-growth portfolio. Portfolio managers will need insight into the failure's scope and expected impact to make intelligent decisions about the commodity portion of a portfolio. Similarly, a reported retail-inventory buildup due to poor customer demand may spell significant losses for a consumer-goods supplier. Depending on the news received via personal computer, a manager may decide to strengthen or weaken his or her employer's position in the affected commodities or company's stock.

Data Resources brings the concept



Planned portfolio growth, broken down by type of security, based on the assumption that total value will double in five years. The graph was prepared using a spreadsheet program.

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Portfolios On Personals

(Continued from page 150)

of the electronic library into tighter focus. DRI lets users take data from Standard & Poor's Compustat financial database and plug them into Visicalc, the popular spreadsheet program marketed by Visicorp. The service requires that the user have Visilink, a special communications program that allows DRI to format the information as a Visicalc template.

This option can save time for busy money managers who compare competitors in an industry. Pulling data out of databases is an easy trick, but a money manager can spend up to an hour locating the relevant figures, calculating ratios, making the comparisons, and typing the data into a personal computer. DRI's offering does all these tasks in one retrieval.

When considering which of the utilities to use, sign up with more than one. Subscriptions are relatively inexpensive, and by using several services, you'll be able to do some comparison shopping.

Common stocks and commodities lend themselves to two well-known securities-selection techniques—fundamental and technical analysis. Personal-computer programs based on both analysis methods are available to help portfolio managers pick winning investments.

A corporation's financial condition, management skills, and trends within its industry provide clear indicators of a corporation's health to "fundamentalists." Practitioners in this school of analysis study several key statistics about companies, including earnings per share, dividends, stock prices, insider interest, and various ratios (short-interest, price-to-earnings, and financial). Depending on how basic data on a company are sorted and ranked, money managers set up different "screens" for individual stocks or industry groups. These include lists for both buying and selling income, and growth or speculative stocks.

Fundamental data can be com-

pared over a five- or six-year period, yielding estimates of how well a particular company and its stock are likely to perform. Management's track record, measured in earnings per share, is another element in the fundamentalist's formula. When combined, the overall statistical picture shows whether the stock appears to be a good buy or not. Knowing the intrinsic value of a stock—based on fundamental-analysis techniques—can also help money managers optimize their stock-options strategies.

The data needed for this analysis can be obtained from either information utilities or from the Standard & Poor and Value Line financial-data sheets. Three personal-computer programs that utilize this method of investment analysis are the Dow Jones Market Microscope, The Evaluation Form, and the Market Maverick.

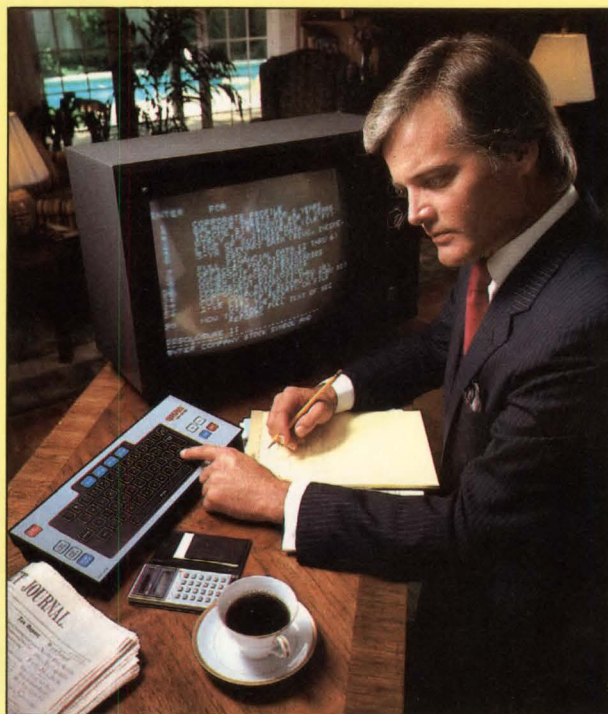
The Market Microscope is a complex program that allows a manager to choose up to 20 of 68 indicators for screening a list of stocks or industry

Investor workstations

They began to appear when one of the giants of Wall Street offered personal computers to money managers and traders who generated a lot of commission income. Now, another giant, E.F. Hutton & Co. (New York), is formally offering "investor workstations" to anyone. Hutton has become an IBM "value-added dealer," providing the IBM Personal Computer along with an electronic information service called Huttonline.

Customers pay full price for the IBM PCs. (They can buy them with money from their accounts with Hutton.) The brokerage house is offering the same package with the Wang Professional Computer, Convergent Technologies' portable Workslate, and the Quazon Quik-Link terminal. Hutton clients pay \$17 a month for the information service, which entitles them to two hours of network time. Contact your local Hutton office for information.

Warner Computer Systems, New York, another value-added dealer, is also offering the IBM PC as an investor workstation, at a price of \$7,500. The offering includes access to Disclosure II, a database of Security and Exchange Commission filings; the Institutional Brokers Estimate System, a library of earnings forecasts for more than 3,000 public companies; and other useful databases for investors.



The Quazon Quik-Link terminal can be used with a television set to access Huttonline, the financial-information service provided by E.F. Hutton & Co.

groups. Thus, portfolio managers can analyze either individual companies or groups within an industry. Group analysis can be very helpful in identifying strong or weak performers within various industries. Data can be retrieved automatically from the Dow Jones News/Retrieval Service, an amenity for busy money managers maintaining several portfolios.

On the other hand, The Evaluation Form requires managers to manually enter 50 key financial facts about the issuers of securities under consideration. This program is not geared to high-volume analyses, but it does handle analysis of a single company very well. Fifty elements are computed from the entered data, including comparisons, qualitative, or true/false statements about the desirability of an issue, and the acceptable price range. The Evaluation Form is based on the time-tested stock-selection techniques of the National Association of Investment Clubs.

Data on disk

A third program using fundamental-analysis techniques is the Market Maverick. The vendor publishes a monthly data disk containing key financial information about 964 stocks. Users feed data from the disk into a stock-screening model based on the assumption that market psychology drives stocks to extremes of price and volume. The program then compares an estimated target price to the current price for a number of stocks, and ranks them according to their up-side potential. This methodology assumes that stocks with big potentials will outperform stocks with smaller or no potential for improvement.

Other fundamental-analysis programs are available in a broad range of functions and prices. Your final choice should be based on the screening methods used in the program, and on whether they provide adequate criteria to meet your needs.

The performance of individual stocks or the market as a whole can



Information utilities

Vendor	Circle
CompuServe (614) 457-8600	516
Data Resources (617) 861-1609	517
Dialog Information Svcs. (415) 858-2700	518
Dow Jones (609) 452-2000	519
Securities & Commodities (516) 757-8638	520
Standard & Poor (212) 208-8000	521
Value Line (212) 687-3965	522

be measured by a variety of statistical methods called technical analysis. Technicians, as practitioners of this method are called, base their buy/sell decisions on a number of indicators produced by such analysis. Their arcane language is derived from that of the statistician.

Measures of probability and curve-fitting techniques are the tools of the technician. The methods include *exponential smoothing*, which, although it sounds formidable, is the drawing of a smooth curve through a dozen or more consecutive closing prices of a stock or commodity. *Trend analysis* is the drawing of a straight line through a series of high, low, or closing prices to project future prices.

The technician's key task is charting statistics to identify patterns. This portfolio manager usually works with price- or volume-movement charts. Preparing good charts takes time—indeed preparation can cut into the time a money manager has for *interpretation* of the charts. The rapid changes in a portfolio of volatile issues, which demand frequent updating, compound the technician's time crunch.

Charting historic price and volume data on stocks and commodities is significantly less time-consuming when done on a personal computer

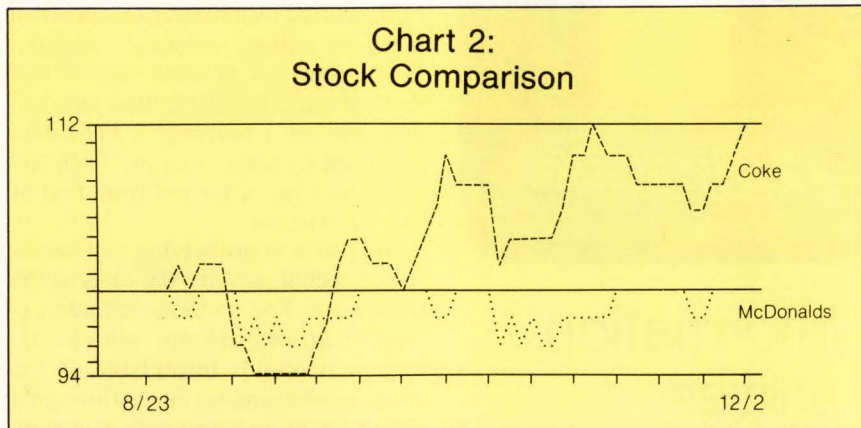
Investment software

Portfolio planning

Vendor	Package	Price	Circle
Context Mgt. Syst. (213) 378-8277	MBA	\$695	493
Ferox Microsystems (703) 841-0800	Encore	\$695	494
Lotus Development (617) 492-7171	1-2-3	\$500	495
Microsoft (206) 828-8080	Multiplan	\$275	496
Sorcim (408) 942-1727	Supercalc	\$195	497
T/Maker (415) 962-0195	T/Maker III	\$275	498
Visicorp (408) 946-9000	Visicalc	\$250	499

Portfolios On Personals

(Continued from page 153)



Dow Jones Market Analyzer chart comparing the performances of \$100 investments in the stocks of Coca-Cola and McDonalds between Aug. 23 and Dec. 2, 1983.

than with a pencil and paper. Calculations are done more swiftly, and once the program is set up, an analyst can plug in new numbers and build new models at will.

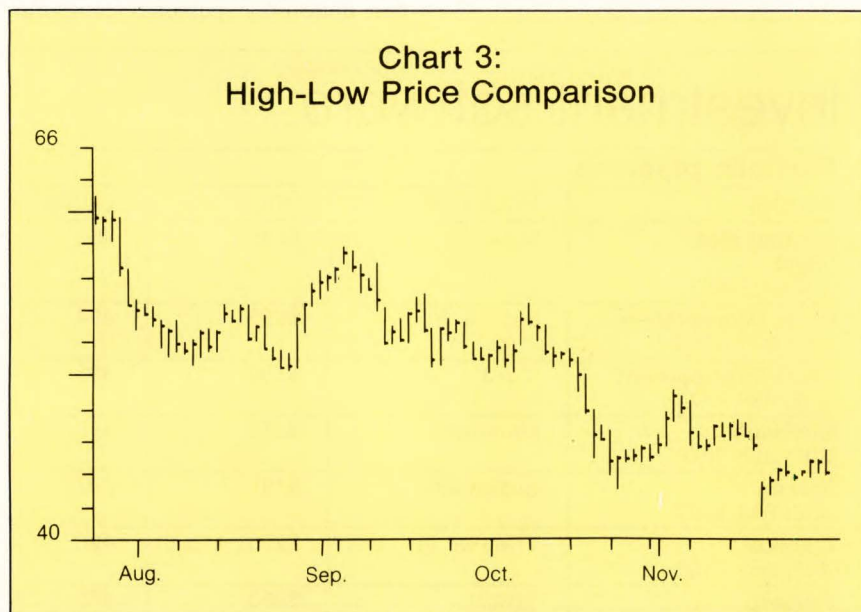
Analysis programs

Personal-computer programs such as the Dow Jones Market Analyzer, Stock Tracker and Market Tracker, and Compu Trac automate technical-analysis chores. Each incorporates automatic data collection from one or more information utilities, a variety of charting mechanisms, and advanced statistical rules for inter-

preting price and volume behavior.

The Dow Jones Market Analyzer is also used directly with Dow Jones' News/Retrieval database. The database plugs portfolio managers into up-to-date data on stocks, options, mutual funds, and bonds. This information can be stored and updated on separate disks. The program puts the data into bar charts of high, low, and closing prices, superimposing trend lines, moving averages, or best-fit lines on them. (See Chart 2.)

These constructions may be completed either manually or automatically, depending on how the pro-



A high-low graph from Compu Trac showing the high, low, and last daily price of Control Data Corp.'s stock from August to December.

gram is set up.

The Stock Tracker uses a tracking method designed by David Howard, an investment adviser. Similar to the principles of Joseph Granville's "On-Balance Volume" concept, the program is designed to track either stocks or commodities. Trading signals are set up for the short term, in the case of stock options, and on an intermediate term for stocks and commodities. About two months of historic data are required before Stock Tracker starts issuing trading signals. Data are entered manually or via the Dow Jones News/Retrieval Service.

Market Tracker is designed for use with the Stock Tracker. It uses six technical indicators to arrive at an "intermediate composite market index." These indicators create intermediate-term buy-and-sell signals for the market as a whole, rather than for specific stocks. You can selectively use Market Tracker signals to override Stock Tracker recommendations for an individual security.

Compu Trac is a collection of comprehensive stock- and commodity-charting and -analysis programs designed for experienced managers who work with diversified portfolios. It also includes data-management functions, such as the automatic acquisition of commodity, stock, and option information from Interactive Data Corp., Commodity Systems Corp., and other sources.

The programs feature bar and point-and-figure charts, statistical studies, account posting, record-keeping, and precision printouts of graphic presentations. (See Chart 3.) They can handle a variety of data. For example, a portfolio manager can categorize a trade as regular, hedge, spread, or spot. The programs also allow him or her to follow margin, maintenance, and equity requirements; and automatically post current equity and open profit and losses whenever the latest closing data are received.

Bonds and other debt securities pose some difficult challenges for

(Continued on page 158)

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* The Top Ten Contest ad which appeared in January *Computer Decisions* inaccurately stated that free reruns would be given to winning advertisers. NO free reruns will be awarded; advertisers may, however, enter the advertiser Top Ten Contest to become eligible for the top five prizes listed above.



Portfolios On Personals

(Continued from page 154)

portfolio managers. Determining whether they are right for your portfolio demands a complex mix of fundamental analysis, yield computations, and quality assessments supplemented by stock-market technical analysis. In this case, the personal computer can be an invaluable aid in gathering the requisite data, calculating yields, and managing the debt-securities portion of your portfolio.

Shepherding the flock

After the planning and selection are done, portfolio management be-

comes a job of riding herd on issues. And that means keeping corporate records current and tracking investment performance, tasks that are tailor-made for the personal computer.

Most of the portfolio-management programs automatically update stock and security records, posting new prices and volumes, tracking ex-dividend dates, and maintaining a tax record of sales, audit trails, profit-and-loss statements, and detailed accounting records. The Personal Investor is one such program.

Electronic spreadsheets afford one

of the best opportunities to mathematically compare returns and portfolio performance. The row-and-column formats lend themselves to comparisons of a variety of investment data over time. Capital gains, dividends, and balanced returns are easily compared against the investment costs for multiple portfolios. No money need be invested until the returns on all sample portfolios are simulated and compared. Personal computers make these tasks much easier, faster, and more directly controllable by a portfolio manager.

Personal computers can also help money managers reduce the tax bite. Managers need comprehensive analysis of the tax consequences of their investment decisions along with the advice of specialists. This is necessary not only to maximize net profits, but also to back up tax reports should the Internal Revenue Service begin to scrutinize them.

Automated management

An investment plan is the roadmap to portfolio profits. A clear articulation of a portfolio's objectives in measurable quantities is important. It facilitates comparisons of results and guides managers as they adjust their portfolios to achieve maximum returns. If the corporate objective is to double a portfolio's value in five years, the average annual return must be 20 percent. Quantified goals such as this make it easier to build a computer model of your portfolio's performance.

A personal computer improves the likelihood that portfolio managers will realize corporate goals, but the machines are not magic charms. Personal computers are only tools, and their use by portfolio managers doesn't eliminate the need for an internal investment-planning department or discipline.

It pays to clearly define and quantify goals and objectives, establish a plan to meet them, and compare the results to projections. This process leads to a clearer articulation of what

Investment software

Fundamental analysis

Vendor	Package	Price	Circle
Centennial Software (303) 796-7468	Stockfocus	\$60	500
Dow Jones (609) 452-2000	Dow Jones Market Microscope Dow Jones Spreadsheet Link	\$700 \$249	501
Financial Software (216) 338-6811	Market Maverick	\$395	502

Technical analysis

Compu Trac (504) 895-1474	Compu Trac	\$1,800 plus \$200 annual update	504
Dow Jones (609) 452-2000	Dow Jones Market Analyzer Dow Jones Commu- nications Program	\$350 \$195	505
H & H Trading (415) 672-3233	Stock Tracker	\$295	506
	Market Tracker/ Grapher	\$295	

Portfolio management

Investors Software (415) 981-5261	Portfolio Master	\$195	507
PBL (612) 720-4996	The Personal Investor	\$145	508
Summa Software (503) 644-3212	Trader's Accountant	\$350	509
Walton Group (617) 720-4996	Portfolio	\$195	510
XOR (612) 938-0005	Blu Chip Portfolio Manager	\$80	511

(Continued on page 162)

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—By Pacifico A. Lim. Customer Information Control System/Virtual Storage (CICS/VS) explains step by step how to write CICS application programs that operate in a visual storage environment. The author thoroughly analyzes correct layout of information display, debugging processes, and special program techniques. You'll find data on the most recent CICS application programs. \$29.95

3. DOCUMENTATION STANDARDS AND PROCEDURES FOR ON-LINE SYSTEMS

—By Martin Rubin. Geared to today's interactive systems and terminal-oriented environments, this practical guide brings you ready-to-use standards and procedures to replace outdated batch system methods. You'll see how to adapt these methods to numerous hardware and software environments, as well as to various staff organizations. \$25.75

4. COSTING HUMAN RESOURCES The Financial Impact of Behavior on Organizations

—By Wayne F. Cascio. Discover how accurate costing can lead to crucial savings for your company. Cascio provides practical methods for assigning realistic dollar values to personnel activities. Focusing on labor contract costing, he reveals the true price of improvements in wages, hours, and conditions. He also explains how to measure turnover, absenteeism, and sick leave costs. \$19.95

5. USING THE IBM PERSONAL COMPUTER

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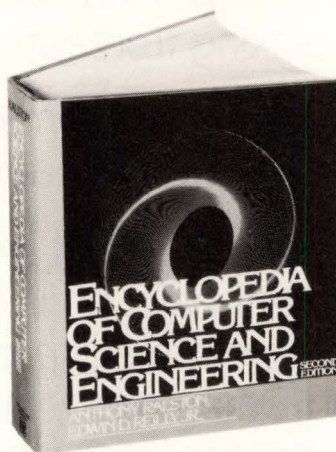
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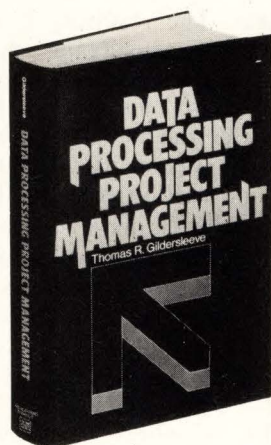
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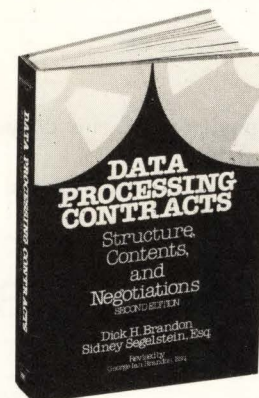
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Portfolios On Personals

(Continued from page 158)

the composition of the corporate portfolio should be.

The objective of doubling the port-

folio's value every five years, for example, poses a formidable challenge.

Achieving such high performance

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Donald R. Woodwell, a financial analyst for IBM, is the author of Automating Your Financial Portfolio, published last year by Dow Jones-Irwin (\$19.95).

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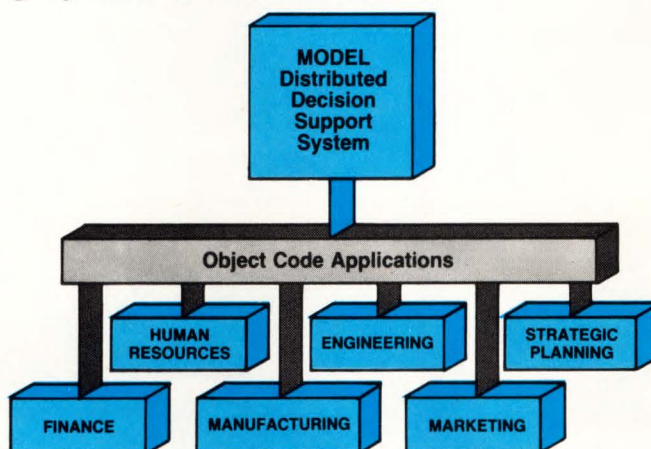
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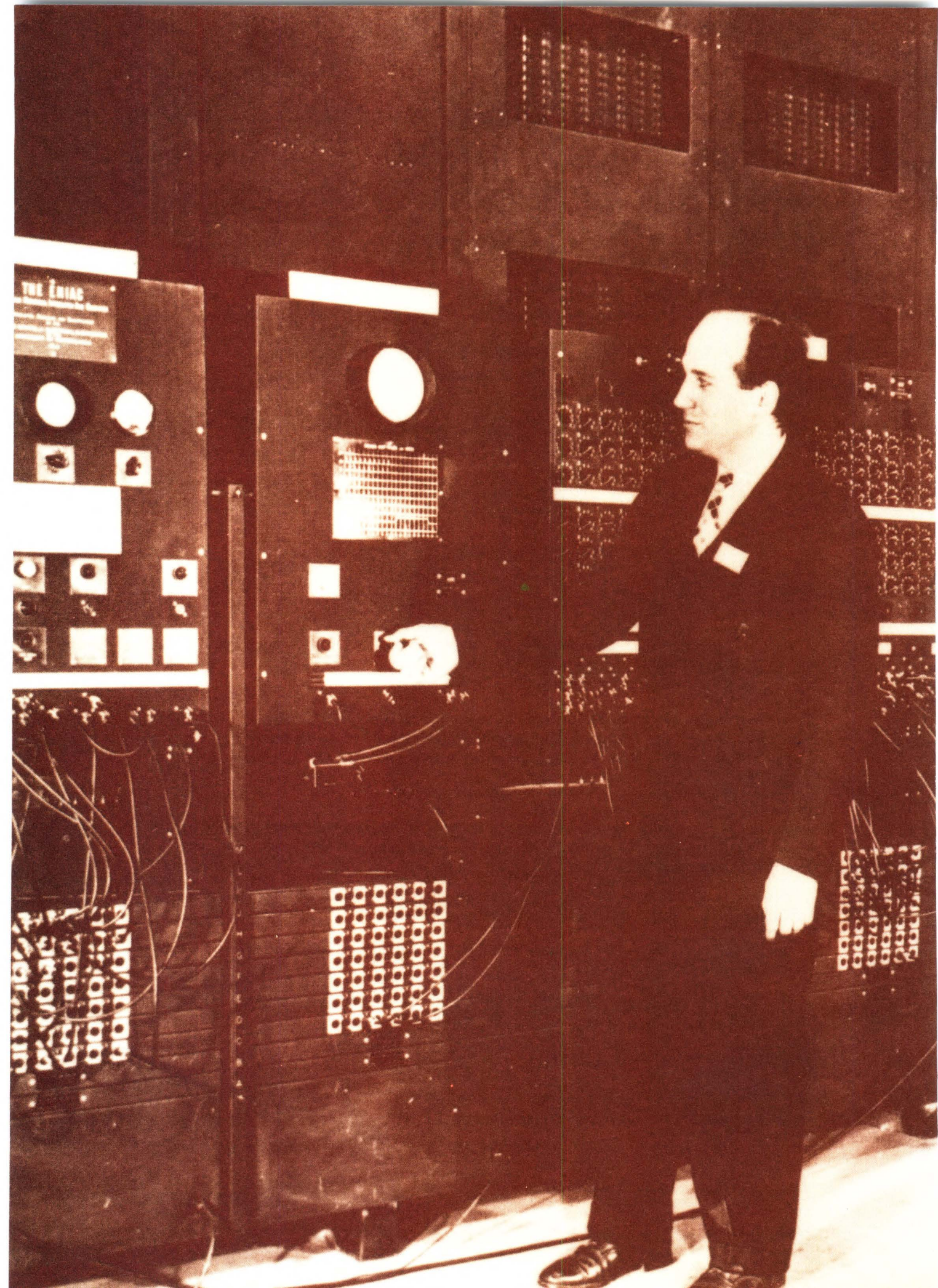
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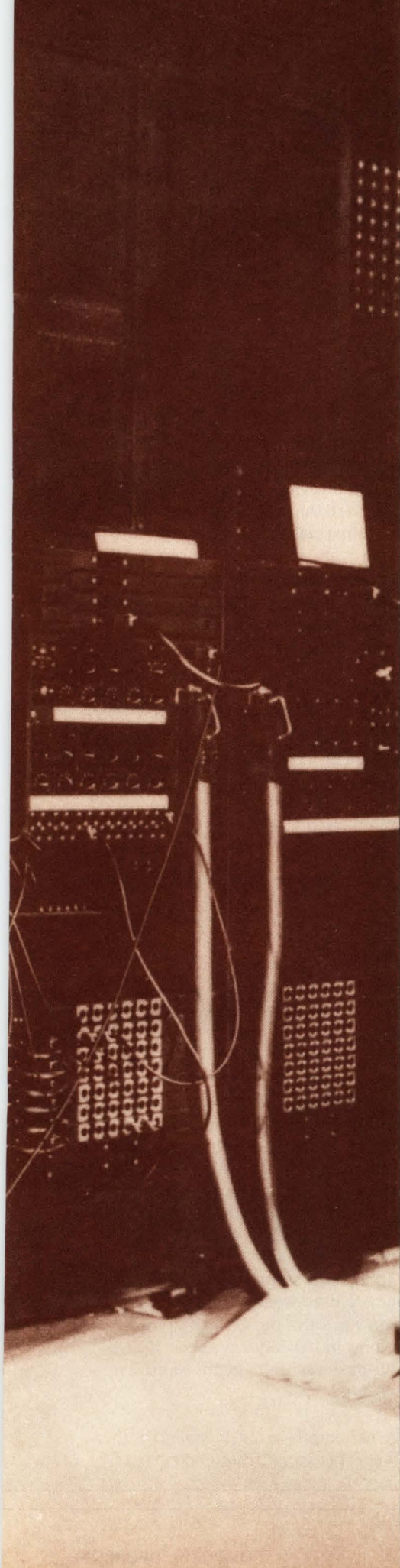
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Don't fall behind with an obsolete system

It's more than sad when a system is too old to work properly—it's costly. Here's how to recognize, and avoid, that sorry state.

by David Kull, Management Issues Editor

Obsolescence, always a creeping phenomenon, creeps more rapidly these days. Technological developments accelerate.

Major new computer lines appeared about every eight years during the 1960s and 1970s; that cycle spins almost twice as fast now. Other aspects of information technology advance just as rapidly. Meanwhile, demands on information-resources departments multiply as businesses turn to them more and more frequently for a competitive edge. As systems age more quickly, determining when they are simply too old becomes more difficult—and more important.

Two forces push systems toward obsolescence—economics and functionality. A system is ready for replacement when the costs of keeping it exceed those of changing to another, or when it cannot meet the corporation's needs. Often, these forces work in tandem, making the decision to change a judgment that combines the desire for improved services with a need for cost-effectiveness.

Figuring a system's operating costs is simple mathematics. The key is to include *all* costs. Lease payments and depreciation are only the start.

There are also expenses for space, cooling, and power. The newer generations of smaller, power-efficient CPUs provide considerable savings in these valuable commodities, sometimes making room and board for the older models unacceptably expensive. And costs for technical support, which are likely to increase as a system approaches retirement, can become exorbitant—particularly when a vendor discontinues a line. These “ancillary” costs would make some systems uneconomical even if you could get the systems for free.

You must also tote up expenses for a new system. Determining them requires careful projections, particularly when the new technology is only a gleam in the manufacturer's eye. You must monitor the choices that are available or soon will be, however. An old system becomes obsolete as soon as superior alternatives appear.

According to Robert V. Head, president of CAPIT (Company for Analysis and Planning of Information Technology) in Stafford, VA, there are a number of industry observers who can project the trends in cost and performance for

Photo courtesy of Sperry Corporation

Obsolete Systems

(Continued from page 165)

mainframes about five years ahead with a high degree of confidence. Most mainframe vendors, with the important exception of IBM, will advise customers on developments if they sign non-disclosure agreements. Head recommends engaging a technology-forecasting service, such as the Gartner Group or Yankee Group, to help you keep up with Big Blue.

When considering a spanking-new system, you must give thought to the

Monitor available options. An old system becomes obsolete as soon as there are superior alternatives.

probability of *its* obsolescence. Vendors recognize the shortened life cycle of systems and have tightened leasing arrangements accordingly. By charging a premium for shorter-term leases—of three or four years, as opposed to the traditional seven—or by jacking up the bail-out penalties, they're assured of turning profits by the time the customer starts looking toward the next computer generation. The primary recourse, besides being aware of the potential problem, according to Robert Head, is to shop for the best deal. For most corporations, this means checking out the plug-compatible-mainframe manufacturers.

According to Kailash Khanna, vice president for strategic systems planning at American Express Co. in New York, organizations can retain considerable flexibility in meeting their mainframe needs. Vendors, including IBM, describe their products about a year before bringing them to market. "If you're looking a year or two ahead, you can plan to use what you know is available or what you expect to be available," Kailash points out. "Then, when the time comes, you can take the best course."

Organizations running at least two mainframes can halve the risk of

being stuck with an obsolete one by staggering the end dates of the leases. F. William Hoffman, a consultant with Price Waterhouse in New Orleans, points out that "leapfrogging" two eight-year leases is almost as good as having four-year commitments for each machine. You can change one unit every four years as your workload demands.

In assessing the risks of signing a lease, a company should consider the length of time the product line has been on the market. The younger the model, the less risk in making a long-term commitment. On the other hand, even a four-year lease would be imprudent if the model has been on the market six or seven years and is about to be replaced. Hoffman tells of a steel manufacturer that leased two IBM 360 series processors fairly

late in the line's life cycle. Even with moderate workload growth, Hoffman says, the equipment was inadequate—and technically obsolete—long before the lease expired.

"Don't think you can outsmart the lessors," warns Hoffman. "If they're offering equipment at a very low cost, it's for a reason."

Hoffman believes reliable, realistic capacity planning is the key to avoiding obsolescence. An organization should review these plans annually to be sure that the projections hold true. Companies make some common mistakes in predicting their horsepower needs. Many times, they will underestimate the transaction volumes for new online systems or the demands of sophisticated databases and high-level programming languages. Professionals forget that online pro-

Assessing the situation

Data-processing managers in American Can Co.'s metal-packaging division recently compiled reports in the format below to assess their 32 major application systems. (The form shown describes the kind of information to be gathered, rather than presenting a sample report.) The managers passed the reports to top management, recommending replacements of six systems.

System Profile

A. System Name

1. Primary Function:

Briefly describe the system's primary objective.

Primary User:

Identify specific departments using the system—the "owners" of the data and reports.

2. Secondary Function:

Where applicable, the system's secondary uses. An accounts-payable system's primary function is to maintain the company's payable liability and to generate payments to vendors. A secondary use is to provide information for tax reporting.

Secondary User:

For an accounts-payable system, a secondary user would be the corporation's tax department.

3. System Age:

How long has the system been in use?

4. Business Supported:

Which business units or divisions use the system?

B. Design Characteristics

Describe the system in the user's terms, emphasizing business, rather than technical, characteristics. Give processing frequencies (daily,

cessing, unlike batch operations, can't be transferred to after-hours or weekends.

"An organization will have stable capacity needs or gentle upward trends for several years," Hoffman says. "Then it will put in a sophisticated new system and be slow to adjust to the new demands. Some organizations end up adding or converting to a new machine every year."

Companies expecting increases in processing needs can leave themselves a margin for error by acquiring a computer near the bottom of a line of compatible machines, Hoffman notes. If necessary, they can renegotiate the agreement and migrate upward fairly painlessly. But those anticipating only moderate increases in demand might dig themselves into a hole by signing a long-term lease

for a top-of-the-line model.

A development that may complicate capacity planning for almost all dp shops is the personal-computer boom. Personal computers can push mainframe needs up or down. Some experts see the possibility of downloading applications from the mainframe. Others see vast numbers of personal computers, functioning as terminals, pumping data into the mainframes and doing some processing there. It's too soon to know the strength of either effect in an organization. While observers disagree over the degree of impact the personal computer will have, they all acknowledge that it injects at least some additional uncertainty into the planning process.

"Personal computers are likely to increase capacity requirements,"

weekly, monthly, etc.) and pertinent processing statistics (number of invoices per month, checks per month, etc.).

C. Annual Operating Costs

Include computer-operations costs, and data-entry, data-control, and telecommunications charges, as well as any equipment cost for those units that were acquired for specific applications (special terminals, printers, etc.). Also include any systems and programming charges for maintenance and development activities. Report these costs individually and, where possible, differentiate between fixed, allocated costs and direct, out-of-pocket costs.

D. Annual Non-dp Personnel Costs

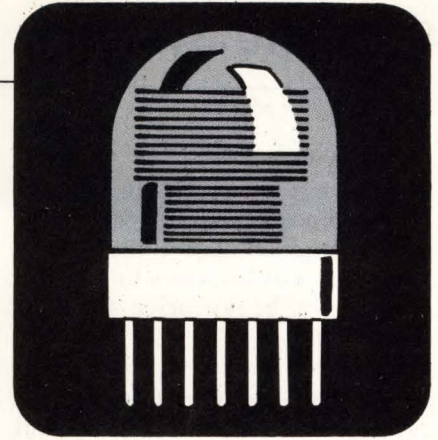
Report costs for personnel who have been specifically hired to support the application system and spend more than half their time in that capacity.

E. Functional/Technical Comments

Comment on significant operational characteristics that affect the value or use of the system from the user's viewpoint. Comments may deal with the amount of manual intervention or checking required, the ease with which the user can interact with the data, any design attributes that preclude desired activities, or any business opportunities that may not be possible because of the way the system operates. Also, discuss the system's technical limitations (in nontechnical terms), and clarify coding and file-structure complexities and how they may inhibit quick, efficient data modification. (You may, for example, point out the lack of online processing efficiencies, such as editing and data validation.)

F. Recommendations

Suggest both short- and long-term actions. Generally, the recommendations will fall into one of three categories: 1) Continue using the system with normal maintenance; 2) Make significant modifications or upgrades; or 3) Replace the system. Conclude with estimates of costs, paybacks, and potential risks.



Hoffman says. "The new IBM PC 3270 makes it easy for users to make demands on the mainframe, for example. But at this point, the impact is not strong enough to dramatically affect projections."

Robert Head sees more volatility. "Most assumptions about capacity have to be thrown out," he argues. "A bank with a 2 percent increase in account-activity rates every year for the past 15, for example, can no longer extrapolate that trend."

It's not enough to keep abreast of changes in million-instructions-per-second rates and storage costs. Advances in peripherals or communications can render an entire system obsolete. This applies to disk devices, printers, and other specialized add-ons. In the 1970s, for example, a new generation of check-sorters made that chore much easier—for those banks with mainframes that could accommodate the required operating system. Others had to switch central processors to keep up.

A comprehensive assessment of current system capabilities and future needs can cost from \$10,000 to \$100,000 in consultants' fees, according to Robert Head. Such a study should project about five years into the future, with fairly firm projections covering the first two years. Annual reviews need be only thorough enough to ensure the assessment's continued validity. After a full study establishes a baseline for an entire system, a company might break down its annual reviews, focusing on a particular aspect of technology each year. It might take a close look at the operating system one year, mass storage the next, and so on.

It's not a good idea to have leases for peripherals fall due at times other than when the mainframe commit-

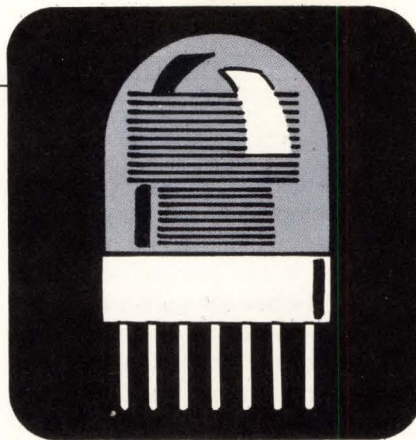
Obsolete Systems

(Continued from page 167)

ments expire, however. An upgrade in one piece of equipment might make another obsolete. If the lease on the second still has years to run, you may pay a heavy price for that obsolescence.

An organization's tax specialists should review every lease or purchase agreement *before* it's signed—but the accountants should not do their part without the advice of the technical staff. William Hoffman tells of an electric utility whose accountants assumed a new mainframe had a 20-year life—and depreciated it at that rate for tax purposes. When the dp department found it needed a new system after only four years, its managers figured the utility had at least written off a large share of the old machine's value. The fact that it had not didn't necessarily cost extra—the full value would be written off eventually—but management's dismay at the accounting loss did not work in data processing's favor.

Companies should not rely too heavily on economic analyses in making their acquisition decisions. These analyses always point to the same conclusion, Hoffman contends.



"Economically, a long-term lease will always look better than a short-term one," he says, "and if the equipment's useful life is long enough, it's always cheaper to purchase."

Technical considerations, however, often turn those seemingly sure gains into bad bets. Hoffman describes a cash-rich bank that took advantage of a good purchase price on an IBM 370/155. The 370/158 with virtual storage came onto the market a few months later, slashing the value of the bank's machine. In fact, the bank had to buy a \$200,000 conversion unit just to keep up with the new technology.

Systems can become outdated in many ways, not all of which would be obvious to the nontechnical professional. Sometimes, even the dp staff won't recognize the problem's

extent until it's too late. This happens when an application dies a slow death from too much patching. Rather than revise a system in an orderly fashion as user needs change, data processing applies "temporary" fixes. As these patches add up, service declines and maintenance costs soar. Eventually, a major system overhaul will be necessary. And it will be more difficult and costly than it would have been without the awkward postponements.

"The way to avoid such a predicament," advises Kailash Khanna, "is by keeping in touch with users about their needs."

Usually, an organization's dp needs evolve, but occasionally they change suddenly. American Can Co. in Greenwich, CT, for example, recently began a diversification into financial services and other non-packaging businesses. At about the same time, it began decentralizing its data processing.

It was obvious that the metal-packaging division, which had some of the oldest dp equipment in the company, would have to respond to the new situation, according to Joseph C. Donia, its managing di-

Playing catch-up in the public sector

How old are the information systems that serve the U.S. government? So old that manufacturers have stopped supporting more than half the equipment that operates them. So obsolete that by upgrading them, the country could gain more than \$29.5 billion in savings and revenue enhancements over the next three years.

These are among the findings of the President's Private Sector Survey on Cost Control. The recent report, by the task force of business leaders that studied the government's data processing and office automation, identified general and specific problems.

One of the basic problems is simple age. The average age of the government's 17,000 larger computers is almost seven years, the

task force says. (In private industry, the average age of automated data-processing equipment is under three years.) One reason the systems are so old is that government agencies must go through a lengthy acquisition process. Requirements instituted in the 1960s to control the proliferation of government computers and ensure competition for bids often cause considerable delays. The task force cites a U.S. Forest Service attempt to award a system contract in which seven reviews of the agency's request for proposals added a year to the acquisition cycle.

The report does not pin all the blame for the obsolescence of government systems on these procurement controls, however. The task force also sees a deficiency in

the government's information-resources leadership.

"The government has failed to develop a coherent system for [data-processing] planning and management," the report states. "As a result, it has not capitalized on the substantial opportunities for cost savings and effectiveness improvement."

Among the task force's recommendations is the appointment of a federal information-resource manager to oversee a government-wide steering committee. It also recommends that each federal agency hire full-time, professional information-resource managers. Most agencies now assign responsibility for the information function to an under-secretary who has several other duties as well.

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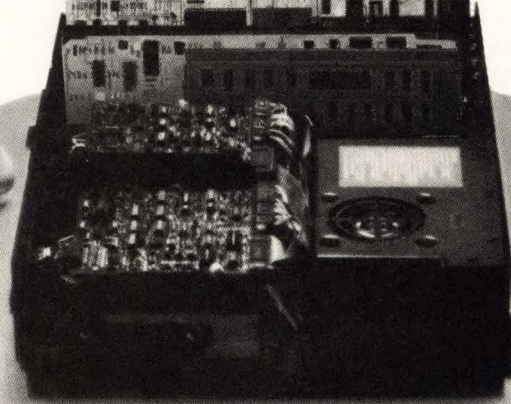
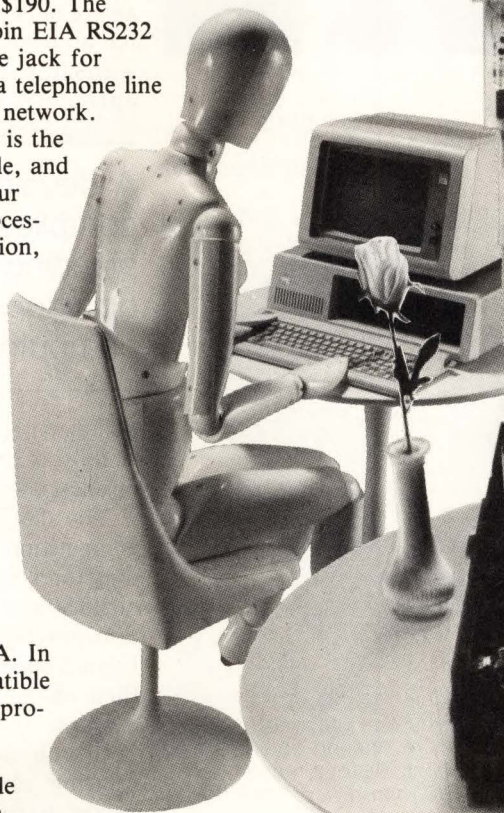
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Obsolete Systems

(Continued from page 168)

rector of information systems and services. But just how much would it have to change? And in what direction would it have to move?

To find the answers, Donia developed a form on which his six dp managers could profile the 32 systems for which they were responsible. Each system represented a major application, such as accounts payable, accounts receivable, and payroll.

The forms (See the box on Page 166.) provided spaces for the managers to describe each system's functions, technical characteristics, and costs. They also allowed for comments and recommendations. Since the reports would be directed to general management, the managers used nontechnical language as much as possible. Rather than discuss I/O (input/output) statistics, for example, they wrote about the number of checks processed. The data center provided most of the descriptive information. The managers also talked with end users about their needs and concerns before writing the comments and recommendations.

The system-review form provided for three general recommendations: Continue the system with normal maintenance, significantly modify or upgrade it, or replace it. Each recommendation was supported by a discussion of the related costs, expected paybacks, and risks. The managers concluded that six of the 32 systems required replacement.

"Generally, these systems were not designed for a decentralized operation; they weren't responding to users' needs," Donia says.



"When we looked at our systems, some users were surprised at how much manual effort was going into automated tasks."

Donia, American Can



"Don't think you can outsmart the lessors. If they're offering equipment at a very low cost, it's for a reason."

Hoffman, Price Waterhouse

Donia sent the reports to his division's top management and to the corporate dp group. Their responses

are still pending, but Donia is optimistic about gaining their support. The users' input will help. "When we looked at these systems, some of the users were surprised at how much manual effort was going into automated tasks," he notes.

Information-resource managers should also listen to staff to determine how up-to-date their systems are. A company should not upgrade its machines just to please programmers, of course. But it should be aware of the difficulty it will encounter in attracting and keeping people without having the latest technical enticements. William Hoffman

A development that may complicate capacity planning for almost all dp shops is the personal-computer boom.

points to high turnover among professionals as one of the hidden costs of obsolescence.

You should also keep an eye on the competition—competitors' advances may force you to play catch-up. Most airlines are still trying to close the competitive gap American and United opened in the late 1970s with their online reservations systems, for example.

If you *are* to miscalculate in figuring your organization's system needs, particularly its capacity requirements, it's best to err on the side of having too much power. Any loss from overinvesting in information resources should be minimal and will probably be recovered eventually as demand catches up. Underestimates can lead to losses that may never be recouped.

"If you don't have up-to-date systems, you may miss out on opportunities," says Kailash Khanna. "But the biggest hits come when equipment can't cope with demand—particularly in online systems. When that happens, you may actually be losing revenue." □

Automated assessment

Capacity planning can be a complex and formidable chore. But don't be fainthearted; help is available—in the form of systems that measure systems. Copernicus Model Release 2, for one, from Technotronic Inc. in McLean, VA, predicts the effects of hardware upgrades, workload increases, and new applications on cpu needs. The model analyzes IBM MVS and VM systems and presents graphic results. It's available for \$7,000 as an option on the Copernicus 820 system for computer and network-performance measurement. For more information, call (703) 356-2151.

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HOW TO LAND TOP TALENT

Signing up stars is only half of what it takes to build a winning corporate team. The other half? Keeping the stars from becoming free agents.

by Ara C. Trembly

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In information management, as in sports, building a winning team is the name of the game. The successful manager tries to sign top performers—those who can help the team exploit its strengths and achieve its goals. Who are the dp stars? “They’re the self-motivated personnel. You don’t have to keep an eye on them—you know they’re making good things happen. They make users happy, and they manage to cut through problems like a hot knife through butter.

All you need is half a dozen people like that and you can conquer the world,” says Alan Kahn, vice president of data processing and operations for Goldman Sachs and Co., the New York-based investment bank.

But once the stars are on your roster, how do you keep them there? Other teams will jealously regard your lineup, hatching schemes to lure away your best players. And, don’t overlook the headhunters, who are ready to offer anything and everything to encourage your first stringers to defect. Recruiting, after all, is only a small part of succeeding in a seller’s market for talent. Retaining the cream of your crop should be your No. 1 priority.

(Continued)

Landing Top Talent

(Continued from page 173)

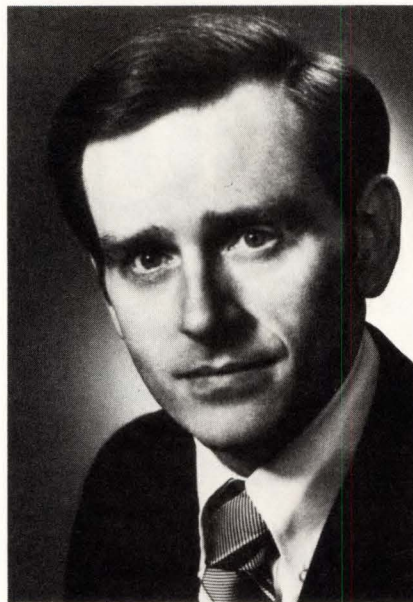
Retaining valued personnel begins with sound recruiting practices. It's essential to select employees to fit your organization's needs. Hiring mistakes consume not only time and money, but also productivity. The high turnover that results from frequent mis-hires can lower morale and spread discontent.

"When we make hiring mistakes, it's usually because we overlooked something in the applicant's background," says Harvey F. Brush, executive vice president and director for Bechtel Group Inc., a San Francisco-based engineering and construction company. "Failing to check thoroughly an applicant's educational and personal references or job experience can lead to hiring a misfit or an incompetent."

"There's no sure-fire method of finding quality recruits who will stay with you," says Ronald Stefanowicz, former manager of data control/international for Merck & Co., Rahway, NJ, and currently director of information systems at Middlesex General-University Hospital, New Brunswick, NJ. "A lot depends on your organization's procedures. The personnel department may play an important role in your recruiting practices. So may employment agencies and your own network of associates. You may have to make good use of all these resources—don't lock yourself into a single mode."

Although no hiring procedure is foolproof, careful planning can help you avoid potentially harmful miscalculations. First and foremost, know all you can about the positions you're trying to fill. Define all the responsibilities of open slots by formulating job requirements and descriptions. This will give you a resource from which to glean questions for interviews. Learn to distinguish between required skills that can be learned on the job and those that are needed immediately.

"Look for those people who will precisely fit your specifications," recommends Herbert Halbrecht of Halbrecht Associates, a Stamford, CT, executive-recruitment firm that spec-



"When recruiting, I spend a lot of time talking with job applicants, then I follow my instincts."

Woods, Deere & Co.

ializes in MIS/dp positions. "Don't overhire. Often recruiters oversell the organization or overcommit the company to benefits. You must have realistic professional opportunities for the individuals you hire."

Resumes in perspective

Usually, the first glimpse of a prospective employee is seen through a resume. Resumes are valuable tools, but you should put them in the proper perspective. Some resumes seem impressive because they are written by commercial resume services. On the other hand, if your future star writes his or her own resume, the document you receive will likely not be as polished as the professional job. Don't be fooled. Read for content, as well as for style.

"Resumes are very important," says Halbrecht. "They are most useful as a basis for selection of candidates for initial interviews. Resumes provide a chronological work history, and define an applicant's noteworthy accomplishments. You won't always be able to spot the frauds, but you can look for a pattern of successes or promotions. Candidates who have had many jobs within a short time span

are not likely to stay with you long, either."

"Resumes provide a good starting point, but I don't use them to make final decisions," declares Joel Kenerdine, staff manager of corporate planning for AT&T Information Systems, Morristown, NJ. "If I'm looking for new people, I start with resumes to determine background for personal interviews," adds Kenerdine, who is also president of the Central New Jersey chapter of the Data Processing Managers Association (DPMA).

Stefanowicz finds resumes useful for determining the number and quality of potential employees in the job market. "When you advertise a job and get 200 resumes, chances are that only a small percentage of the respondents will be qualified for that particular position. But you now have a list of possible candidates to use when other positions open up," he notes.

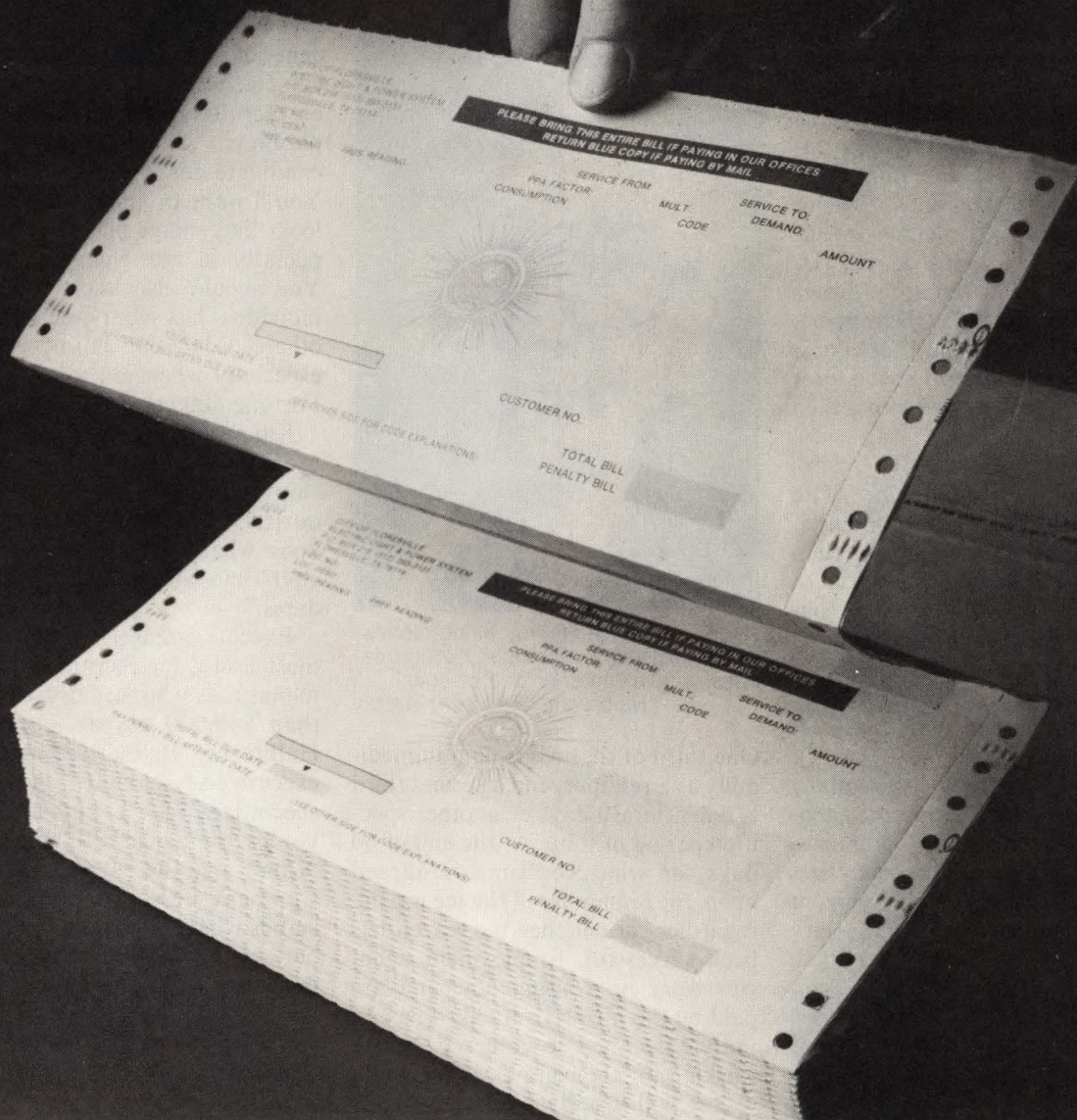
Once the resumes have been reviewed and suitable applicants chosen, what's the best way to handle the

"One of the best ways to hold onto employees is to compliment them for outstanding work."

Everman, Selective Personnel

initial interview? Volumes have been written on how to conduct employment interviews, but at least a few basic points should be kept in mind.

First, tell the applicant what the job entails, and how your own position interacts with that job. Next, tell the candidate how you run your department and how he or she can expect to be treated. Show the applicant that you're interested; avoid letting your eyes or your mind wander. If you prefer a more informal atmosphere, conduct the interview while both of you are sitting on a couch or in comfortable chairs. Finally, provide comprehensive information about your company's policies and



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Landing Top Talent

(Continued from page 174)

benefits. Being straightforward during interviews establishes the kind of healthy relationship that will keep employees loyal.

Many managers structure their interviews to uncover the intangible qualities of a job candidate. "I don't have a cut-and-dried method for interviewing," declares Larry D. Woods, manager of research, dealer systems, for Deere & Co., Davenport, IA. "When interviewing, I look for a genuine desire to learn. I spend a lot of time talking with applicants, then I follow my instincts."

Brush of the Bechtel Group expresses similar sentiments. "The magic that happens at the moment of introduction is more important than what comes later. A discussion of mutual interests, not necessarily job-related, lets you empathize with and size up a candidate. Compatibility with you and your staff is probably more important than pure technical skills."

To make recruitment easier, many executives look to employment agencies and executive-search organizations for help. Executive searchers usually charge between 30 percent and 33 percent of the annual salary allotted for the position to be filled.



"There's no sure-fire method of recruiting. . . . Don't lock yourself into a single mode."

Stefanowicz, Middlesex Hospital



"Many executives err by hiring clones of themselves; the company probably doesn't need another one of you."

Halbrecht, Halbrecht Assoc.

One third of that fee is paid immediately as a retainer, and a second third is due after 30 days or another specified period of time. At the end of 60 days, or whatever time is agreed upon, the remainder of the fee is paid, regardless of whether the search has been successful. Employment agencies work on contingency, and are paid by the hiring firm only when an individual they've referred begins working for the company. The agency fee will usually be 1 percent per \$1,000 of the employee's annual salary, up to a limit of 25 percent or 30 percent.

Tread carefully

"Agencies should be used very carefully," warns David Everman, vice president and dp recruiter for Selective Personnel, a large agency in East Brunswick, NJ. "There are a lot of agencies out there, but you should only use those that give maximum service—which involves properly screening applicants in face-to-face interviews. Some agencies don't bother with that. They're just interested in matching jobs to qualifications."

"A good recruiter initially screens prospective applicants by telephone,"

says Everman, who is also vice president of the Central New Jersey Chapter of DPMA and who lectures on recruiting and retaining good dp personnel. "The next step is to see the candidate for a personal interview. You'll want to know what he or she looks like; image plays a big role, especially in management positions. You should also know whether the individual has supervised and trained others. Education is important, too, especially when placing people with Fortune 500 companies."

Kahn suggests that executives who use agencies establish good relationships with key people in dependable outfits. "That way, they'll get to know what you want and won't waste your time with inappropriate candidates."

Executive-search organizations are most useful for recruiting high-level managers, who usually earn more than \$40,000 a year, according to Halbrecht. "If you're going to use an executive-search outfit, find one that specializes in the kind of position you're trying to fill," he advises. "Don't give the organization the assignment unless it clearly understands what the job is all about. Find out how many similar searches it has done in that field and at that level. If you're hiring a data-center manager, you'd have to be crazy to use a search firm that hasn't done any dp recruiting."

Some dp executives prefer to recruit through recommendations from associates. Kahn believes that word-of-mouth can be an effective way to find worthwhile candidates: "If a prospective employee is recommended by someone whose judgment you trust, you've already fought 90 percent of the recruitment battle."

Kahn adds that his organization has obtained good results from an open house held recently to recruit dp professionals. During the event, information was offered on the company and on the available jobs, and interviews were conducted. As a result of the open house, which was well attended, 13 individuals were hired. Kahn stresses that the savings in re-



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Landing Top Talent

(Continued from page 176)

recruitment costs "more than covered the advertising and other expenses of the open house." Although initially he was uncertain whether qualified candidates would attend the seminar, he found the caliber of applicant "surprisingly high."

Another way to lure quality employees is to provide such perquisites as moving expenses, an automobile, or help in finding and/or financing a home. Such benefits, however, cannot be counted on to retain personnel. After all, other organizations can just as easily offer the same or better perks to *your* top performers.

Holding them down

How, then, do you keep your key players from straying to competitors? Kenerdine emphasizes career development as a way to retain valued personnel. Staff members must be given adequate opportunity and training to develop their skills and prepare themselves for advancement.

Stefanowicz agrees, noting that high-caliber individuals like to be challenged and want to move up. "Lay out a plan that includes promotion for your employees, right from the beginning," Halbrecht advises. "If you do that, you'll keep your good people longer. The only effective way to keep your stars is to establish an intelligent succession program that offers alternatives and spells out the additional training needed to advance to the next level." In the vast majority of companies, he adds, the path to advancement is not clearly delineated. He points out that companies that successfully keep their top performers emphasize preparations for the job that lies one step ahead.

Naturally, your salary and benefits structure must compete within your industry and geographical region, if you expect your most valued proteges to remain loyal. But it takes more than money and benefits to keep good employees happy. "You should motivate subordinates," Everman advises. "Don't depend on the supervisors who work for you to do it. If an employee is motivated, he or she is



less likely to listen to a headhunter."

Everman believes that "one of the most important and overlooked ways to keep employees is to compliment them for outstanding work. It doesn't take a minute and it doesn't cost a penny, but if you do it, they'll give you 100 percent. You won't have to ask them to work overtime."

Everman also advocates bonuses for staff members who have made particularly valuable contributions. "If an employee comes up with an idea that you can really use, reward him or her. Chances are you would



"Failing to check educational and personal references or job experience can lead to hiring a misfit or incompetent."

Brush, Bechtel Group

have paid a consultant twice as much for the same idea. And the reward doesn't have to be money; it could be extra vacation time or special privileges."

Another technique to help hold on to your prize performers is to make their work stimulating. Kahn recommends that the most exciting projects—those that can, if done well, result in a raise or bonus or higher visibility—be assigned to your top stars. "The good ones are worth 10 times the average ones," he explains. "You have to take care of them."

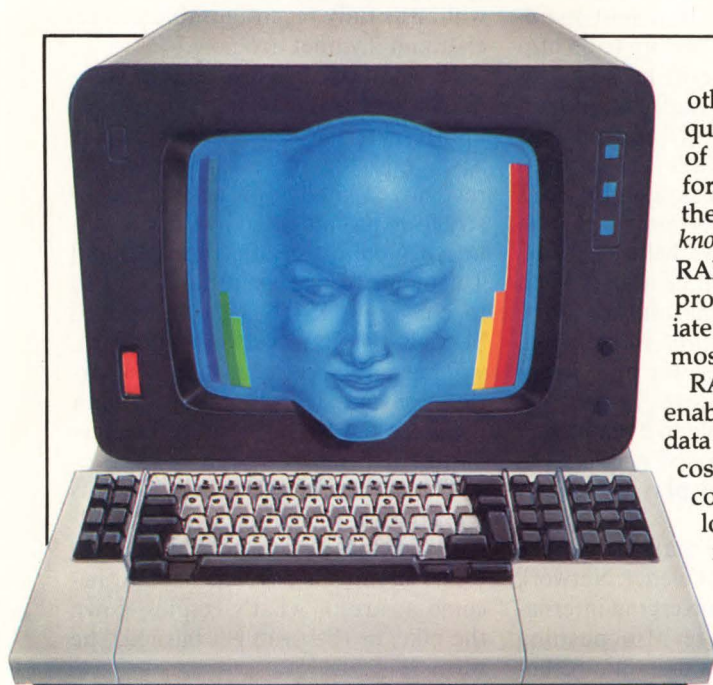
What's the worst mistake an executive can make when recruiting top performers who won't leave at the drop of a diskette? "The biggest mistake I've ever made was going against my intuition and hiring on the basis of credentials alone," says Kahn. "I make it a point now to interview all senior-level candidates personally; it gives me a feel for who the winners are."

Kenerdine believes that hiring from outside the company without considering candidates already working in your organization is counterproductive. "It's the biggest morale-killer in the world," he asserts.

According to Halbrecht, many executives err when they attempt to hire "clones of themselves." Chances are your organization doesn't need another one of you, he notes. The wise course is to figure out your own weaknesses and find someone who is strong in those aspects. That person will complement you and add strength to your management team.

Probably one of the most valuable moves you can make to enhance your hiring success is to develop a strong network of professional associations through personal contacts and professional organizations. That network can serve as a resource for recommendations, referrals, and timely advice. But don't rely too heavily on any one source or technique for recruiting employees. Instead, use every available resource, including your personnel office, to ensure that the choices you make are sound and that the top professionals you draft today will be on your roster tomorrow. □

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DATA COMMUNICATIONS

(Continued from page 74)

The "new SNA" will probably be the cumulative result of piecemeal changes, says King. First, he predicts, IBM will bring out common software to be shared by all systems. To update SNA, making it dynamically reconfigurable, IBM is developing a common database system to drive all network resources, asserts King. If a manager must fix a failure or make a change, new software will be dynamically generated by the database. Managers will no longer have to reload many separate systems.

Also, the heart of SNA—System Service Control Point (SSCP)—will be changed, he predicts. SSCP is now part of the VTAM utility system, but as SNA continues to evolve, SSCP will move to the front-end processors. This configuration makes the front ends, in effect, nodes. It is a more distributed system.

King foresees other hardware

changes. "SNA networks will have a primary front-end processor [a 3705 or the new 3725] and a host mainframe," says King. "But up to 25 other 3705s or 3725s will be added as distributed nodal processors, all handling local traffic." If the front end fails, one of the nodes will be activated, more or less as Network Supervisors back up one another in Tymnet. Eventually, believes King, intelligent nodes will be able to elicit changes in the system software as the network configuration is changed, eliminating the need for any downtime to reload software. In the end, managers will be able to dynamically reconfigure SNA-based networks to add batches of Displaywriters or System/36s.

Peter C. Waal, marketing vice president for GTE Telenet Network Services, believes converging international standards are also pushing IBM to solve SNA's dynamic-recon-

figuration shortcomings. Within the year, he predicts, "SNA networks will be as fully reconfigurable as Telenet and Tymnet are now."

IBM established a de facto standard with SNA, "be it good, bad, or indifferent." However, Waal expects SNA and the more internationally recognized modes of network construction promulgated by the Consultative Committee on International Telephone and Telegraph (CCITT) to converge. ISDN, the Integrated Services Digital Network standard, will become a reality as common carriers convert to all-digital operations, he adds, and SNA fits into that scenario "just fine."

The caveat for users, says Waal, is knowing the reconfiguration capabilities of mixed-vendor networks. "User organizations will have to become aware of what's coming down the pike, or they will get burned," he warns. □

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DBMS Roundtable

(Continued from page 146)

even considered the direction the software industry was heading.

We evaluated a flock of vendors at one of those coffee-and-donut sales conferences, and asked them to build a file or write a report for various functions. Vendors that could do the

job in a reasonable amount of time were considered further, until we had narrowed our selection down to a couple of vendors that we felt could do the most for our corporation. Then we asked "Do you have the DBMS we need today, does it work, is it dedi-

cated, or am I going to be the pioneer with arrows in my back?" We ended up with a DBMS and a fourth-generation language that can be used by both programmers and end users.

Hoose: My company followed the same route. We hit all the coffee-and-donut sessions, and went to a database symposium a couple of years ago. We invited all the vendors to talk about their systems. From their presentations, we narrowed our selection down to five or six vendors. We included IBM only because we knew management would ask, "What about IBM?" even though we already had excluded it.

The five or six remaining vendors were invited to present a technical walkthrough of their systems. We narrowed our choices down to three packages, which we tested either on our equipment or on the vendors' equipment using our data.

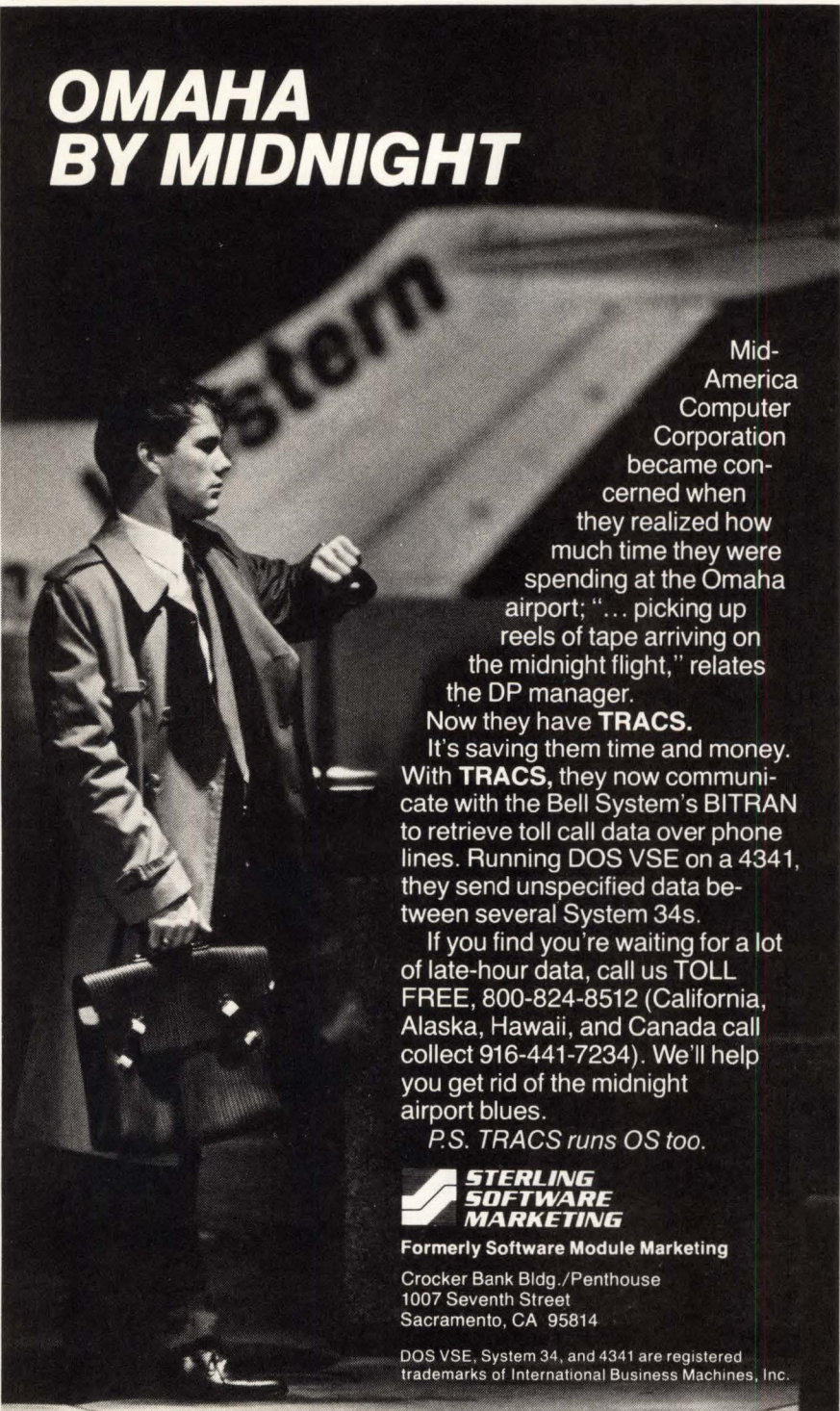
Sometimes a user of one database management system needs or wants to install another vendor's offering or an incompatible system. How to handle such a transition depends on whether you maintain the old system or transfer data to the new one.

Lyon: Imagine you want to share data between an IBM and a Honeywell, and each has its own database manager. You know that the files in both mainframes are so big that you can't replicate the data and keep both copies up to date. So how do you maintain them? One way is to discontinue the old DBMS and use only the new one, at a tremendous expense and with no thought about productivity or profitability.

Another approach is to provide a logical record-transfer mechanism between mainframes. You use bridges to update the data and programs between mainframes, and an audit to synchronize the two databases.

Adler: The strengths and weaknesses of database management systems manifest themselves in various applications and environments. If you have one group of users that needs a network DBMS and another group that needs a relational system,

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Putting Information to Work.

DBMS Roundtable

(Continued from page 182)

then by all means you should put two DBMSs on your computers.

One of the hottest trends a few years ago was the database machine. Now it's not attracting any attention. Is it losing favor among data-processing managers or just pausing before a new thrust? Will it come on strong again?

Walsh: I see a fresh surge of popularity for database machines. Data are valuable resources, and as personal computers achieve 1- and 2-megabyte memory levels, they will process rather than contain data. Our invaluable mainframes are going to become storage systems, and managers at executive workstations will use tools tailored to their needs. So whether we use a back-end database machine or convert our current mainframes to back-end processors, increasing costs and productivity of new applications will push us to use the database machine.

Lyon: If you're talking about older

general-purpose machines like the Britton Lee, I'd say database machines are gone. They may lack the capacity and functionality to handle the powerful, more specialized mainframes around today. However, as users start computing at intelligent workstations, they're going to rely on a central repository, which is just like a database machine. If you look at some of Sperry's mainframes, you'll see they support a database manager.

Adler: I agree. The old back-end database machine is gone, but batch-production processes that once ran on the mainframe during the day are being replaced by systems built by sophisticated end users. The dp department is being reduced to a reservoir of data.

Stephens: I looked at the database-assist processors and the Britton Lee, and found the time and cost required to build a DBMS for them were excessive. But, database machines are coming back. Eventually databases

will be relational; they will be big and require a lot of resources, but a common language will access them, and a database machine will retrieve the information.

Hoese: I think my company's mainframe is going to turn into a database machine. With our information center in use, it's almost there already. We just use it to manage the database.

What's in store for the future of DBMSs?

Puestow: I see better job accounting for use of chargeback systems. I want to be able to pinpoint users of specific information. Also, security will have to improve. Our product monitors which information users can and cannot access, but we would also like to audit the programs users develop, and the data they are accessing. Finally, I would like the directory to access data off any type of DBMS. It's too early to ask vendors to access DBMSs residing on differ-

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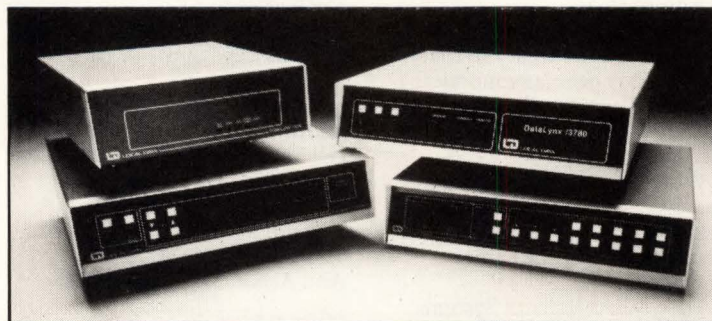
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DBMS Roundtable

(Continued from page 184)

ent cpus, but I'd be happy if I could go through the directory to find data requested by users.

Hoose: I would like to see a DBMS that can access IMS or sequential files. I would also like to see more menus in query systems, and I would like to see more user-friendly systems.

Adler: I, too, would like to see more integration between DBMSs and file types, or a directory concept. I'd like to see the database-micro connection continue to become more usable, and I'd like to see more tools made available to the unsophisticated end user and more menu-driven applications.

Stephens: I'd like to see the communications-download problem solved. I'd also like to see a truly distributed DBMS that is practical and won't eat you out of business. Front-end, menu-driven, user-friendly features are also absolutely essential. I'd also like to see a common access language that works on any cpu.

Lyon: I'd like to see a different kind of problem solved. Almost every user needs a slightly different dialect. The programmer needs a different language than the end user. The end user who works with computers once a month needs a different language than the clerk who uses the system every day, hour, or minute. I'd like to see a DBMS that uses a storage structure that isn't tailored to any particular language. Its language interfaces, tailored to the various users, should access the same database. A hardware assist to the firmware should keep track of indices and pointers that are invisible to the users.

The closest approximation of this solution is found in IBM's System/38, but IBM doesn't provide the last two features. When they are included, you'll be able to run a program developed for the DEC PDP-11 on another computer, because the language interface—not the hard-

ware interface—is what provides that compatibility. You can run IBM's SQL even though another user on the same base is running IDMS or IMS.

Walsh: I would like to see electronic mailboxes and messaging integrated into DBMS. I'm also concerned about developing a smooth link to personal computers, so we can fully realize their potential.

Schryver: I'd like to see database-management software become more like hardware—an inherent part of the machine that can be moved not only within the IBM line, but across any computer system.

After 15 years, business is still clamoring for improved database management systems, and vendors are struggling to keep up with the demands. As technology brings us closer to such goals as the micro-mainframe connection and the distributed DBMS it's likely that the database systems in use today will be obsolete tomorrow. □

RESEARCH REPORT

PCs VS. CWP's IN THE CLERICAL WORKSTATION OF THE FUTURE

- Reviews the progress of personal computer and communicating word processors, and explores current pricing levels and the emerging trends affecting product planning in the field of office automation.
- Analyzes the relationship between the secretarial workstation and facsimile, mainframe computers, OCR and other information input/output/storage devices, and the role of the PABX in the future office environment.
- Discusses the strategic thinking behind IBM's pact with Rolm Corporation, as well as expected network market products from IBM and AT&T Information Systems. The increasing use of personal computers in word processing and the corresponding software for PCs is also considered.
- Explores the current word processing market with estimates of current equipment and shipments. Projections for the next decade are presented, as well as a detailed review of over eighty companies strategically jockeying for a piece of the secretarial workstation market.
- 257 pages; 33 exhibits; published July 1983; price \$1,650.00.

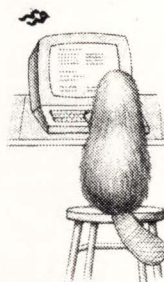
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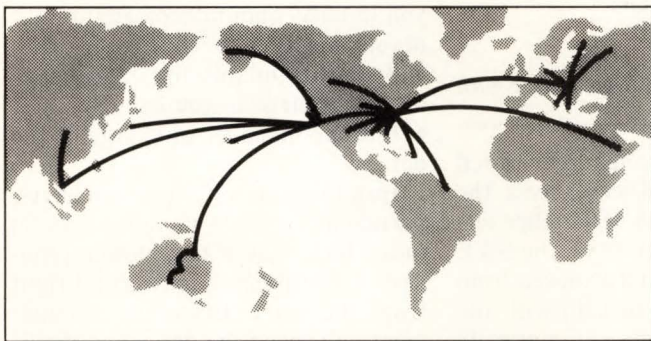
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SNYDERS ON SOFTWARE

(Continued from page 62)

times a day, and that created scheduling backlogs."

Savin had \$300 million in sales last year. It employs two 4-Mbyte IBM 4341s and 300 IBM 3278 terminals for standard accounting and order-processing chores. Flee/XP condenses the libraries continually and automatically.

Cutting down on errors

Automatic updates and adjustments save time, but they also reduce the chance of error during updates. For some organizations, reducing errors isn't a benefit, it's a necessity. Metropolitan Savings & Loan Corp. (Nashville, TN), for example, leases most of its software from Citizens Savings, Canton, OH. "We get an update every three months for all of our applications," explains Benny Byrum, systems programmer/analyst. "We'd set up test files for about a week before moving the up-

dates into the production library. Just moving the updated products into the library left a lot of room for error."

Metropolitan S&L has a 2-Mbyte IBM 370/158 and a 2-Mbyte main-

"A central dictionary ensures that integrity and standards will be maintained."

Torke, A.O. Smith

frame from National Advanced Systems. Branch offices access the mainframes via IBM 3604 teller terminals. In December 1982, the S&L installed Panvalet and Panexec from Pansophic Systems to help with the updates. The packages automatically perform the test-to-production transfers, dramatically cutting down the risk of error.

Users offer several pieces of advice to their counterparts who are considering librarian or dictionary packages, particularly the latter.

- Secure a commitment from top management, and analyze your core needs before installing a package.
- Right at the start, focus on the resources you'll need for installation. Some systems require more staff than you initially plan to dedicate to their development.

- Set up standards for data dictionaries as early as you can.

- Put one manager in charge of the data.

Installing one of these packages, particularly a data dictionary, is no mean feat. You'll have fewer problems if you prepare for a grind right from the start. Effective management will speed the day when the librarian or dictionary begins making data-center life a lot easier and more productive. □

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CURRENT PRACTICE

Remote printing saves

When Baltimore Aircoil Co. Inc. grew large enough to justify having seven North American offices, it started considering distributed data processing. The manufacturer of cooling equipment first replaced its four mini-computers with two Hewlett-Packard 3000/40 systems. Next, it installed five Remote Line Printer Systems (RLPS) from Digital Associates Corp. of Stamford, CT, to tie together the resources in the new system.

The RLPSs link production-control departments in Delaware, Illinois, and Ontario, Canada, to Aircoil's data center in Baltimore. The company, a subsidiary of Merck & Co., is headquartered in Jessup, MD.

Increased throughput

The printer systems facilitate high-speed remote printing, which Baltimore Aircoil accomplishes with Dataproducts' B600 printers. During a benchmark test, the B600 had increased throughput by up to 150 percent, according to John Skrabak, MIS director. The same improvements have been measured during the B600s' regular operations.

The increased throughput places production-control reports in the hands of personnel two to three hours earlier than the old batch system. Those few hours allow management to react to changes more quickly than before and better manage the manufacturing process, says Skrabak. Also, the old equipment was rented month-by-month. The new equipment is leased, saving \$90,000 a year.

Timely reports

Additional systems will place high-speed printers in Baltimore and the company's west-coast data center, located in Oakland, CA, to provide more timely sales and financial reports. Disk-based remote spooling will soon be available to help speed operation of the RLPSs. Remote

spooling lets a user store a file in a queue on a disk if the printer is unavailable. Automatic dialing will also be available soon.

The RLPS can be used with any printer or system that supports either

a Dataproducts or Centronics I/O system. It costs \$6,750. For more information, contact Digital Associates Corp. at 1039 E. Main St., Stamford, CT 06902. The phone number is (203) 327-9210. *Circle 564*

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I. INTRODUCTION

Industry Structure □ Industry Growth □ Technology Progress □ Key Conclusions

II. INDUSTRY STRUCTURE & TRENDS

Market Transitions □ Industry Origin □ Key Software Suppliers □ Software Distribution □ Software Supplier Strategies

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& Analysis □ AT&T's New Direction with UNIX □ Microsoft □ IBM's New O/S Strategy □ Digital Research, Inc. □ Pick Systems □ Phase One Systems, Inc. □ Softech Microsystems, Inc.

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VIII. SOFTWARE STRATEGIES FOR SUCCESS

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SHOW PREVIEW

Interface '84

Whether you're a corporate executive, a data-comm/information-processing specialist, or any computer-decision maker, the Interface show at the Las Vegas Convention Center, March 12 through 15, will be *the* place to be. Interface is touted as the seminar "where technology and management converge."

The twelfth annual conference and exhibition will address corporate, technical, and applications issues in data communications and information processing. It will attempt to offer clear and practical advice on these issues to information managers at every level.

In the last 11 years, Interface has had a large and loyal following. That should hold true for this year's show, as attendance of over 40,000 representatives from more than 240 companies is expected. Here is a glimpse at what conference participants can expect:

Vendors will attempt to resolve possible compatibility problems for attendees. The estimated 1,160 booths will showcase practically every available product and service related to data communications and information processing. For example: local-area networks, network services, desk-top computers, front ends and modems, and network monitors.

Special conference sessions, led by MIS executives, data-communications professionals, and leading in-



dustry consultants, will help participants relate the new technology on display to the growth of their businesses. Each program will focus on a topic of specific interest or expertise. All will highlight trends in communications, with emphasis on planning for the future.

The keynote address, "Toward a national telecommunications policy," will give a view of the world's most wired society (the United States) during the AT&T divestiture.

The session on "Doing business after divestiture" will be of interest to all technical managers concerned with day-to-day network operations.

Four sessions will be devoted to information management. These will focus on the strategic-planning process and the implementation of a strategic plan, and will suggest ways an executive can gain and maintain a

competitive edge for his or her organization.

Another session, called "Proliferating desk-tops," will be about desk-top applications for large-scale users and desk-top links. It will also include a survey of multi-function software.

Three sessions on office-systems integration are planned and will include information on computer-network mail, video conferencing, and planning for workplace automation.

Once a network is up and running, attention naturally shifts to network management. A session on this topic

will include network-privacy and security issues.

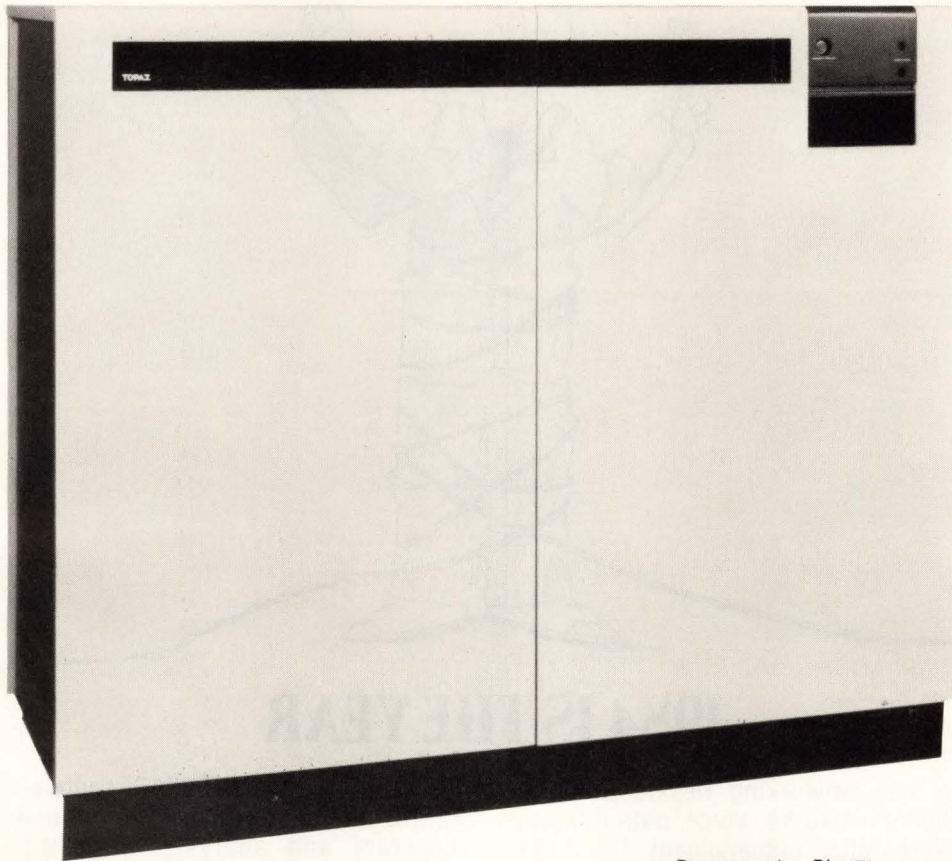
The talks will conclude with an address entitled "Orwell revisited: The 1984 surprise."

There will also be a series of professional briefings, including:

- Introduction to data communications
- Introduction to networking
- SNA developments: The annual review
- Local-area networks
- Digital-PBX growth

You can see the exhibits at Interface for an admission fee of \$10. Full conference-registration fee, including all four days of sessions, plus admission to the exhibit floor, is \$225. The producer of the show is The Interface Group. For more information, call (800) 325-3330; in Massachusetts, (617) 449-6600. □

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SHOW PREVIEW

The NY Personal Computer Show

The 4th annual New York Personal Computer Show will be held at the Madison Square Garden exposition rotunda at 33rd St. and 8th Ave., over Pennsylvania Station. The show, which will run from March 30 to April 1, is open to the public, and over 30,000 are expected to attend. It is designed to appeal to business professionals, as well as present and prospective home-computer owners.

In the past, the Personal Computer Show was system-specific to the Radio Shack TRS-80, Apple Computer models, and the IBM Personal Computer. This year, however, it will triple in size, and will be open to all personal computers.

Exhibitors will be bringing in a supply of merchandise for immediate sale, from which attendees can choose computers, printers, software, disks, supplies, accessories, and services.

The show is strictly an exposition. There will be no speakers, seminars, or workshops. The displays will "speak" for themselves. There will also be a combined book and software exhibit by well-known book publishers and software houses.

Kengore Corp. has had charge of the New York Personal Computer Show for the past four years. Ken Gordon, producer and spokesman, would not give a list of exhibitors, believing this would protect the show's reputation. Says Gordon, "In the past, many exhibitors would sign on and even pay the fee, then drop out at the last minute. The only fair thing to do is keep the exhibitor list under wraps until the last minute." Therefore, a list of participating vendors will be made available the first day of the show. But planning to attend the show seems a safe bet: In the past three years, it had an impressive list of exhibitors.

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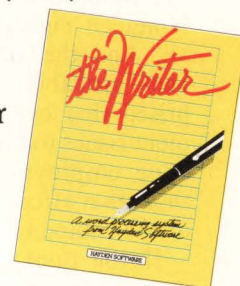
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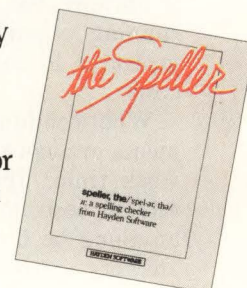
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by Mary Miles, New England Editor

YOUR CAREER

Managing health and fitness

Does the notion of managing employees' lifestyles for a more successful and productive business sound a bit Orwellian? Nineteen eighty-four is here, after all. And the author of the famous book probably wouldn't be too surprised that one of the hot management issues today is the need to influence employees' habits—notably those that affect health—for the good of the company.

If you think this isn't a management issue, ask yourself the following questions: How much money does your company spend on medical- and life-insurance benefits each year? Have you noticed an increase in these expenditures over the last few years? Would you like to handle these costs more efficiently and save a lot of corporate dough?

Escalating costs

Handling the costs of medical and life insurance is an important issue that affects the overall management of a corporation, says James C. Gillis. He's president of a Boston company called Lifestyle Management Systems Inc. (LMS), and one of the creators of a process that goes by the same name. Over the last five years, says Gillis, insurance costs have risen 15 to 40 percent—the average being about 20 percent—per year! It's fairly obvious that those responsible for running organizations should take measures to control and lower said costs.

What conditions, diseases, and ailments are causing employees to lose work time, upping insurance and related costs to the company? Can anything be done about them? The answers to these questions, asserts

Gillis, center on information and good management.

The Centers for Disease Control (Atlanta) estimates that at least half of all chronic diseases could be prevented or postponed through "proper lifestyle behavior." That is, eating right, exercising, and all those other sensible practices that make most of us feel guilty when we fail to do them. According to Gillis, such behavior enhances employees' physical and emotional well-being on the job. And it is the business of a corporation to know if employees are doing these things. If insurance costs are to be controlled, employees' behavioral patterns must be managed.

If insurance costs are to be controlled, employees' behavioral patterns must be managed.

But to manage anything, you must first have facts. Says Gillis, "It is amazing how little information most companies have about their employees, who are the organization's most vital asset. They know far less about this asset and how to manage it than they do about others. Yet, without data, you can't mount a good management program. It's like closing your eyes, shooting in the dark, and hoping you'll hit a small target."

Consider some health data—the most recent statistics from the American Heart Association—on the condition of U.S. residents in general, and probably the population of your organization.

- Nearly 43 million Americans have one or more forms of heart or blood-vessel disease, the leading causes of death in this country.
- In the next 12 months, about 1.5 million Americans will suffer heart attacks, and over a third of that number will die.
- There are 37 million adults in the United States with high blood pressure.
- Cancer, the second leading cause of death in this country, kills almost half a million people a year.
- One of the most frightening diseases—alcoholism—is a factor in a significant number of accidents, the third largest cause of death in the United States.

Getting the picture? Here's another statistic: It costs most companies about \$2,000 a year for each employee who smokes. That's because, on average, smokers are absent 5.1 more days a year than nonsmokers. And those who smoke are more prone to lung-related afflictions, have higher cancer rates. . . . You already know most of the depressing facts. But how about this? In 1984, in this country, the cost of cardiovascular disease (which is linked to smoking) will be almost \$65 billion! The cost to business organizations is a big portion of that figure; they pay through premiums to insurance carriers.

Gillis has more fuel to add to this fire. "Chrysler Corporation released some very revealing information last year," he notes. "Its largest single-source vendor *isn't* the steel companies, or the glass companies. It's Blue Cross/Blue Shield! In 1982, Chrysler spent about \$6,000 per each employee for health benefits. That's almost one quarter of the average salary."

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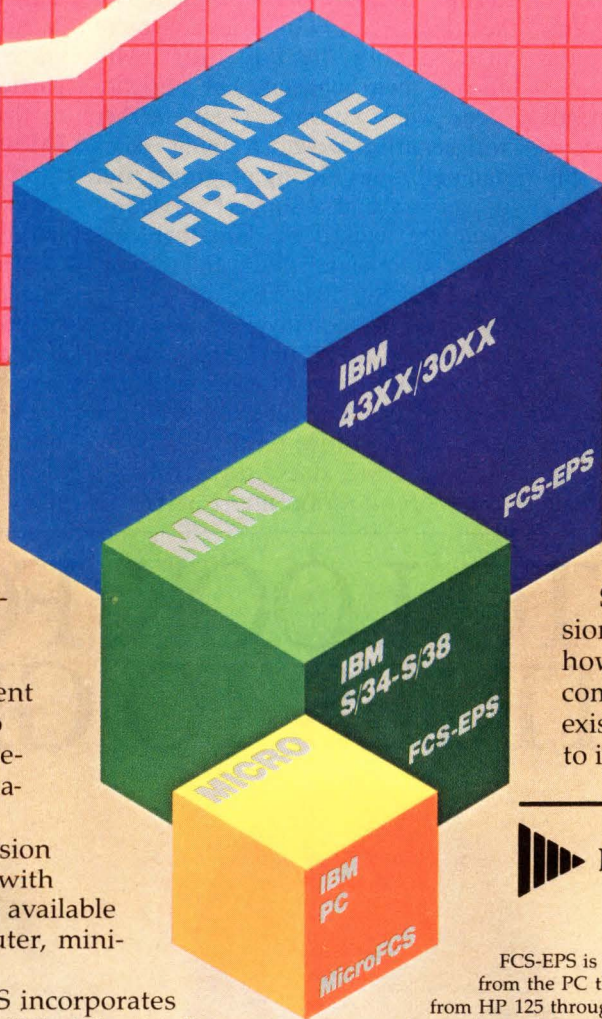
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YOUR CAREER

cost to an organization when one of its employees is through consuming insurance benefits—when that person (to paraphrase Shakespeare) prematurely shuffles off his or her mortal coils. Most managers know that replacing an employee can cost five to seven times that person's salary. Usually, the higher the level of employment, the greater the cost to the corporation.

Xerox Corp. reports that it spends about \$2 million to replace every high-level executive who leaves unexpectedly. That figure represents a combination of all the costs associated with recruiting a replacement; placing him or her; and lost time, lost sales, mistakes, salary, and so on.

The art of prevention

The cost to an organization *can* be staggering. Some attack the problem by investing—in a big way—in gymnasiums, body-building equipment,

swimming pools, and education programs. But these have not been successful, Gillis says, because they are appreciated and used by a limited audience.

There is also the problem of getting employees to comply with health programs. "When you ask people to live healthier lives," Gillis says, "you're often asking them to drastically change their behavior. The statistics alone won't convince them; neither will beautiful weight-training rooms and ambitious dieting programs. But if you can add a support service or structure backed by data that concerns both the individual and the corporation, the likelihood of getting many employees involved and motivated will be greater. And your organization will have the degree of behavioral change it needs to ensure continuing positive results."

What LMS does, says Gillis, is "provide management with an

instrument—a tool—where one did not exist before; one analogous, in its own way, to management tools used for other corporate concerns." The essence of this tool is a copyrighted screening process in which comprehensive health and fitness data from individuals and information on new research are collected and processed via computer. The results on each participating employee are fed back to that person and the corporation. (Most often, screening is done by a third entity—a medical-care facility, for example, or, increasingly, the corporation's insurance carrier.)

"In most cases," says Gillis, "screening is voluntary, but most employees go for it." Some are leery, however, since it's a fairly new concept, and others simply would rather not know everything about their state of health.

"Of course," Gillis adds, "a company *could* probably insist on em-

WHAT TO LOOK FOR WHEN TRIES TO GET ITS F



employees' cooperation, but most are trying to present the idea in a positive, appealing way. I can foresee companies, at some time in the future, making such screening a part of the hiring process for all potential employees, however, so there will be no choice."

How it's done

Each participant receives a complete report (about 30 pages long) on his or her own results, plus recommendations and guidelines on behavior changes that will improve particular aspects of that person's health. The company gets a different report, with aggregate, anonymous coded data on the total group. LMS usually won't screen groups of fewer than 100, for reasons of confidentiality. "It's too easy to pick out individuals in a smaller group, and we strictly respect privacy," Gillis explains.

Interpretations of results and rec-

ommendations are a vital part of a service like LMS, says Gillis. They motivate individuals to change behavior patterns, and enable companies to form a support structure that can lead to consistent improvement.

"We show individuals where they stand under different parameters, such as coronary risk, physical fitness, and stress," Gillis says. "We show them where they are, and then we show them what they can do about it. It's up to the individual, of course, whether or not to alter lifestyle. But the organization's management of the process is crucial to its success."

In the detailed report it receives of the total-group results, the organization is given the means to intervene in employees' lifestyle management and, thereby, better meet their health needs. The results may indicate, for example, that out of 300 employees, 150 are overweight. With such statistics, the corporation knows

that instituting an exercise program and diet counseling are steps in the right direction.

Gillis believes that, in the near future, many larger companies will develop and maintain in-house medical/health facilities, equipped with tools like the LMS process, to keep a finger on the pulse of employee lifestyles and control medical/insurance costs. He also foresees insurance carriers recommending and obtaining services for group-insurance clients. In addition, the Employee Assistance Program (EAP) may improve its ability to provide in-depth lifestyle-management assistance by utilizing such systems.

A good lifestyle-management system need not have the ominous overtones of an Orwellian society. If its purpose is to improve the physical and emotional well-being of employees, while reducing costs for the corporation, both can win. □

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CURRENT PRACTICE

Accounting packages that pay

The key to improved productivity is a system with flexibility—particularly for diversified corporations.

Take McGraw-Edison, a Rolling Meadows, IL-based manufacturer employing 34,000 workers throughout 175 operations worldwide. In 1982, sales were \$2.3 billion. Users at McGraw-Edison believe they've found the flexibility they need in accounting packages by McCormack & Dodge (M&D).

According to Lyle Murphy, director of financial planning and marketing systems, M&D's software is superior because it lets each division and department of a conglomerate use the same systems. This is a real plus, says Murphy, because "there is only one set of software to maintain, and that means higher productivity."

In August 1980, McGraw-Edison bought 10 versions of M&D's G/L Plus, A/P Plus, and P/O Plus accounting systems. Eight of the company's 12 divisions are now using the software, and Murphy estimates that the remainder will be using one or more of the M&D packages within five years.

The divisions using the software are independent entities with different business and data-processing needs, but the programs are identical. Certain divisions have the DOS operating system from IBM, while others run IBM's OS and MVS operating systems. Both the CICS and IMS databases, also from IBM, are used by the divisions.

Before McGraw-Edison purchased M&D's accounting packages, most of the divisional software was custom-coded. Says Murphy: "These systems were inadequate in the face of today's demands. The divisions recognized the need for better software. They were faced with a choice: Either modify the old programs or buy a system that gives them what they already have, what they need today, and what they will need in the future."

McGraw-Edison chose the M&D packages after looking at the offerings of about 30 different vendors. Among the finalists for the accounts-payable and purchase-order packages were MSA, Walker Interactive (formerly Jeffrey Walker Inc.), Informatics, and Tres. Murphy considers M&D's packages to be superior for several reasons. For instance, Tres was not large enough to offer the wide range of functions and features McGraw-Edison needed. The Walker Interactive software didn't allow users to put up the accounts-payable package independent of the purchase-order package.

Each M&D software package is priced according to its range of features. G/L Plus ranges from \$52,000 to \$102,000. A/P Plus costs between \$31,000 and \$66,000, and P/O Plus starts at \$30,000 and rises to \$62,000.

McCormack & Dodge, a unit of Dun & Bradstreet Corp., is located at 1225 Worcester Rd., Natick, MA 01760. Call (617) 655-8200 for information. *Circle 563*

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LETTERS

Remote possibilities?

I have no quarrel with the editorial content of "The war for bigger profits, Part 2—Attacking new markets," in your September 15 "Presidents' Issue." But the photograph of a finger pointing to a particular spot on the topographic map does your publication a disservice. The finger points to a remote area between Lashio, Burma, and Kuming, China, the location of the Burma Road of World War II fame. In fact, this spot is only a short distance north of the River Kwai and the equally well-known "Death Railroad." I just returned from an archeological adventure in those areas, and was astonished to see the map used as a graphics tool. These are some of the most remote and underdeveloped sections of Southeast Asia. Corporate expansion into these markets might be feasible in 2010, but not in 1984!

Leonard C. Silvern
President

Systems Engineering Laboratories
Sedona, AZ

Modem, protocol confusion

The section on modems in "Multi-function modems and muxes" in your October issue contained a glaring error that could adversely affect management considerations on the exchange of information between different personal computers. It stated that both protocol converters and modems are necessary to transfer data between different makes of personal computers. Nothing could be further from the truth! Communication between two such machines is easy with an RS-232 serial port using asynchronous protocol. Units may be connected directly with a null modem. The exchange of data relies only on the medium of transfer, not on the hardware characteristics of the two personal computers.

Modems are necessary for the transfer of data between two personal computers if the machines can only transfer data via communications lines

due to their relative locations. A protocol converter is needed only if one unit has a different line protocol than the other. For example, when an asynchronous personal computer is used as a terminal to communicate to a mainframe or another micro through a network that uses synchronous, SDLC, or other protocols.

Richard A. Yevich
President

Richard A. Yevich Associates
Cherry Hill, NJ

Editors' response: The material cited by Mr. Yevich originated in quotes from reliable sources. His criticisms may be true in an absolute sense. However, in day-to-day experience, using modems to transfer data between personal computers is mandatory if communications are via the switched telephone network. Modems may also be good for intra-office communications, particularly if your staff is accustomed to Bell communications, rather than hard-wired connections using direct physical cabling.

Mr. Yevich is also correct in an absolute sense on the second point. However, there are still some cases in which users wishing to communicate between dissimilar asynchronous micros will need a protocol converter, or at least an adapter card. There are several different flavors of asynchronous communications that use different operating systems that are not compatible. Also, as Mr. Yevich points out, a protocol converter is needed to accomplish file transfers between dissimilar micros communicating via a synchronous host.

Project-management package omitted from list

Your November article on project management was a good one. I appreciated your awareness that tools are only as effective as the commitment of their users.

In the list of selected project-management packages, however, there

was no mention of infoTool Corporation's OnTime system. You will find this system designed with the dedicated manager in mind. Its unique troubleshooting feature allows projection of costs, resources, and time, and it permits CPM tracking by theoretical, planned, or actual schedules. At \$275, its price is well within the range of other packages you listed. OnTime requires an Apple II with two disk drives and a printer. Those wishing more information can contact us directly by calling (206) 779-9508 or writing to infoTool Corp., Drawer 809, Poulsbo, WA 98370. Carol B. Taylor
infoTool Corp.
Poulsbo, WA

Wants more on fourth-generation languages

David Kull's article, "Nonprocedural languages: Bringing up the fourth generation" (December), is excellent, as far as it goes. It just doesn't go far enough. Our appetites are whetted for much more. For example, a table displaying the following elements for each known nonprocedural language would be extremely useful: machine(s) capable of supporting it; special features; known drawbacks; and—by no means least important—the price.

Then perhaps those among us still struggling with (dare I mention its name?) Cobol can get some idea of just how long it's going to be before we too can enter the promised land of the Fourth Generation.

Eric Bender
Director, MIS

Dawson College
Montreal, Quebec, Canada

Editors' response: Unfortunately, we do not have the resources to do extensive testing of software. We hope the article opened your eyes to new developments, which you can investigate in relation to your own needs.

Address letters to the editor to Computer Decisions, 10 Mulholland Dr., Hasbrouck Heights, NJ 07604.

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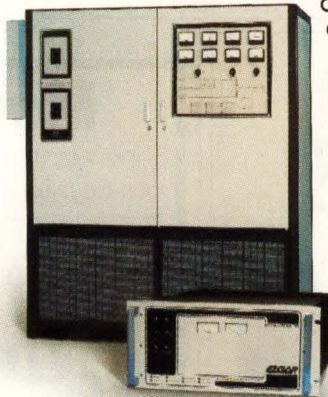
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CIRCLE 257

LAN workstations

An IBM Personal Computer-compatible workstation, the DMS-816, allows MS-DOS or CP/M programs to be run on Digital Microsystems' HiNet local-area network. It has 256 Kbytes



of RAM, RS-422 network port, RS-232 printer port, and a parallel port. Price: \$1,695. A companion DMS-3/501 master station features 15-Mbyte hard disk and 320-Kbyte 5¼-inch floppy drive, three RS-232 ports, and an RS-422 port. Price: \$6,500. HiNet/PC system software, which manages the network, is \$500.

Digital Microsystems, 1755 Embarcadero, Oakland, CA 94606.
(415) 532-3686.

CIRCLE 258

File-transfer package

PC/COM is a host communication interface that facilitates file transfer, electronic mail, file management, and file control for IBM operating system, TSO, CMS, and CICS users. Price: \$795 to \$2,395, depending on operating-system requirements. The system works in conjunction with an IRMA 3278 interface board to provide high-speed transfer of files between the mainframe and the IBM PC or XT. PC/COM's universal file-transfer capability is compatible with major IBM operating systems and associated application files. Single-function keys provide users with easy-to-use menus to transfer text files, source programs, and data/or and object files between the mainframe and the Personal Computer.

National Product Marketing, 2 Northside 75, Atlanta, GA 30318.
(404) 351-2902.

CIRCLE 259

FOR JUST \$50 YOU CAN CHANGE THE FUTURE.

Lunch with
Lou and Paul Jones
12:30 Sept. 28
Director's Room

STATUS:
Changing an
appointment

Dinner with
Lou and Paul Jones
7:00 Oct. 7
University Club

With The Calendar from Hayden Software, now you can have the future right at your fingertips.

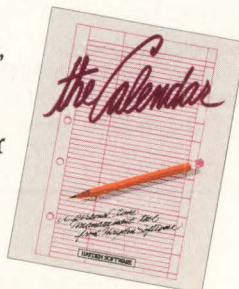
The Calendar's multi-window design makes it easy to keep track of all your business appointments, make schedule changes, and plan ahead.

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For more information, see your local retailer, or call 1-800-343-1218 (In MA 617-937-0200). Hayden Software, 600 Suffolk St, Lowell, MA 01853.

*Runs on the Apple II, II +, IIe, the IBM PC and compatibles.

HAYDEN SOFTWARE



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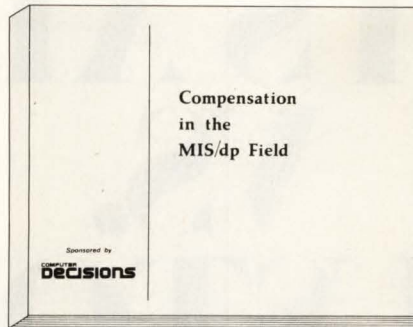
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Remember the item you bought with the "one-size-fits-all" label? Maybe the arms were too long. Or it bagged at the waist. Or you buttoned it at the neck and found you couldn't swallow. So you vowed to choose more wisely next time.

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ACCESSORIES

UPS with battery

The Integra Uninterruptible Power System incorporates a maintenance-free gel battery that can be placed in the computer room. The system provides three to 10 minutes of standby power and is available in ratings from 5 kVA single-phase to 30 kVA three-phase. A range of optional features is available, including a programmable extended blackout warning. Price: \$1,800 to \$2,875.

Nova Electric Manufacturing Co. Inc., 263 Hillside Ave., Nutley, NJ 07110. (201) 661-3434. **CIRCLE 201**

Ribbons for Diablo

The Qume Superstrike ribbon has been designed to maximize the performance of the Diablo 630 printer. Price: under \$6. Superstrike printwheels for Diablo printers offer 10 IBM-compatible typefaces and cost under \$6.50. A red Multistrike IV ribbon cartridge is for the letter-quality Qume Sprint 7, 9, and 11 Plus printers. Cost is under \$10 each for a minimum order.

Qume Corp., 2350 Qume Dr., San Jose, CA 95131. (408) 942-4000. **CIRCLE 202**

Power protection

Wang's Purepower Conditioner and Purepower System Protector help shield Wang hardware from power problems. Prices range from \$400 to \$3,100. The system protector protects hardware from spikes, lightning, and other problems. Price: \$150 for single phase, \$375 for split phase.

Wang Laboratories Inc., One Industrial Ave., Lowell, MA 01851. (617) 459-5000. **CIRCLE 203**

Minifloppy diskettes

A line of 5¼-inch diskettes for micros and word processors offers 48-track-per-inch density and 40 tracks per recording surface. The diskettes, certified to be 100 percent error-free, are enclosed in a protective jacket that



cleans the disk as it turns. Ten-pack prices range from \$30 for single-sided, single-density, up to \$60 for premium double-sided, double-density diskettes with a lifetime guarantee.

Comrex, 3701 Skypark Dr., Torrance, CA 90505. (213) 373-0280. **CIRCLE 204**

Tape cleaner/tester

The MLT-600 system cleans, tests, evaluates, retensions, rewinds, and removes static charge from computer



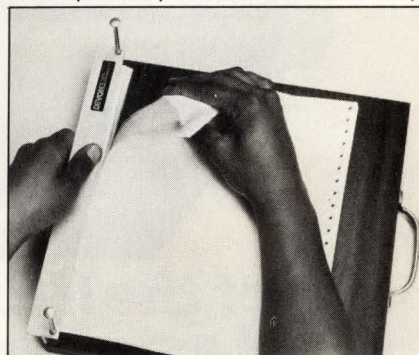
tapes used on 800-, 1,600-, and 6,250-bpi drives. Users can specify any combination of procedures. It generates detailed records on the condition of tapes, including cumulative reports of an entire library, reporting on magnetic defects, leader length, and missing or double BOT markers. It also positions the tape so a missing marker

can be added or an extra one removed. Price: from \$15,495.

Dennison KYBE Corp., 82 Calvary St., Waltham, MA 02254. (617) 899-0012. **CIRCLE 205**

Strips perforations

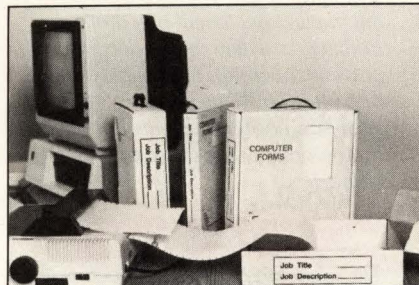
A 12-by-12-inch board with a tear bar mounted on two control posts allows perforated margins to be removed from computer paper in one motion. The Rip & Strip Forms Board can strip



up to 25 sheets at a time, depending on the weight of the paper. Price: \$35. **Devoke Data Products**, 1500 Martin Ave., Santa Clara, CA 95050. (408) 980-1366. **CIRCLE 206**

Boxed paper

Mini- and micro-sized boxes hold stock-format computer paper which feeds directly from the box to the machine. These Brief Case Boxes are stackable, storable, and reusable, and can also be used to file the processed



forms. Price: \$5 to \$25, depending on quality and weight of paper.

Computer Peripheral Products Inc., 4690 Joliet St., Denver, CO 80239. (303) 371-0590. **CIRCLE 207**

ACCESSORIES

Cord managers

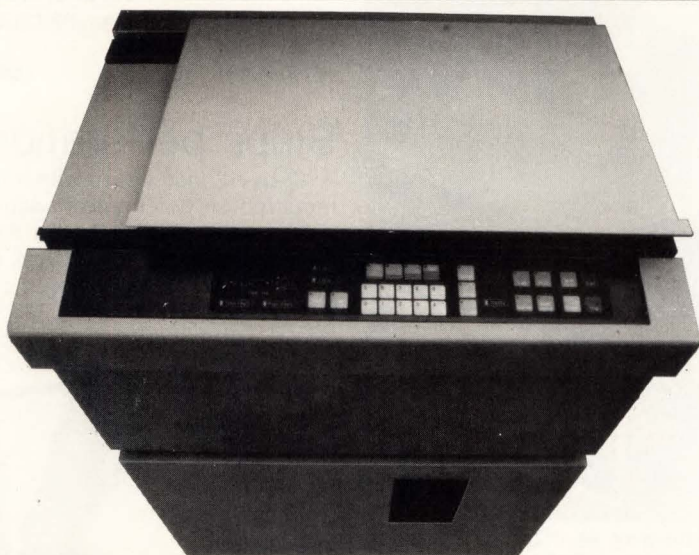
Wire Away is a \$12.95 power-cord-storage device. It can be mounted beneath your desk in any position and safely stores up to 14 feet of cord. Wire Tree is a \$69.96 four-outlet

power device that has an easily replaceable 8-amp fuse, which protects your computer's circuitry from harmful surges and spikes. It filters out radio-frequency interference and conforms to IEEE guidelines. Wire Tree Plus 2 offers the same features as Wire Tree,

but with two additional outlets, for \$99.95. Wire Cube is a \$39.95 single-outlet surge protector that fits right into the wall.

Dialight Corp., 203 Harrison Pl., Brooklyn, NY 11237.
(212) 821-7555.

CIRCLE 208



Meet the KEL Model 5211 Laser Page Printer

Higher technology for higher performance

The KEL Model 5211 Printer combines advanced laser, optical and Charged-Coupled Device imaging technologies in a new and extraordinarily versatile cut-sheet page printer. For sophisticated text and document processing applications, the Model 5211 is today's higher-performance choice.

With eight type fonts available concurrently, the Model 5211 makes style and/or size changes without interrupting document preparation. Printing resolution is 240 dots per inch, providing a sharp, high-quality image. The Model 5211 prepares up to 20 letter-size pages per minute, printing bit map graphics as well as alphanumeric characters.

Unique document scanning and transmission capability

The Model 5211 takes high performance printing a step higher. Using Charged-Coupled Device technology, the Model 5211 scans documents at 240

dots-per-inch resolution, transmitting bit information via its RS232C I/O interface. Available only on the Model 5211, this optional feature gives you a uniquely efficient and convenient way to digitize image data.

An optional electronic forms overlay feature enables the Model 5211 to merge and print down-line-loaded forms with variable data, eliminating manual changing of preprinted forms. A local copy option lets you use the Model 5211 as an office copy machine.

KEL Model 5211. The higher performance printer. For complete information, use this magazine's reply card or contact KEL directly.



KEL, INC.

400 West Cummings Park
Woburn, MA 01801 (617) 933-7852

KEL, INC. is a subsidiary of Kanematsu Electronics Ltd., one of the leading Japanese suppliers of computer products.

CIRCLE 125

Crt enhancement

A fine-mesh screen called Eyesaver, when placed over a crt, reduces glare, sharpens character image, and increases contrast. The \$40 add-on also prevents fingerprints and smudges and neutralizes dust-attracting static electricity.

Select Computer Products, 192 Mather St., Hamden, CT 06517.
(203) 248-8081.

CIRCLE 209

Diskette file

A Rotary Stand files 100 diskettes or minidiskettes on a desktop. It can be operated with one hand. Price: \$240 and \$340. An expansion kit increases the capacity to 200 disks.

Fellowes Manufacturing Co., 1789 Norwood Ave., Itasca, IL 60143.
(312) 893-1600.

CIRCLE 210

Two-sided diskette

UHR-II Ultra High Resolution double-sided diskettes increase the capacity of Amlyn's Model 1860 disk drive from 1.6 to 3.2 megabytes. They can be used with advanced drives of greater than standard capacities beyond 1 Mbyte. It has several features to increase diskette life and prevent distortion. Price: \$6 to \$10 each.

Dysan Corp., 5201 Patrick Henry Dr., Santa Clara, CA 95050.
(408) 988-3472.

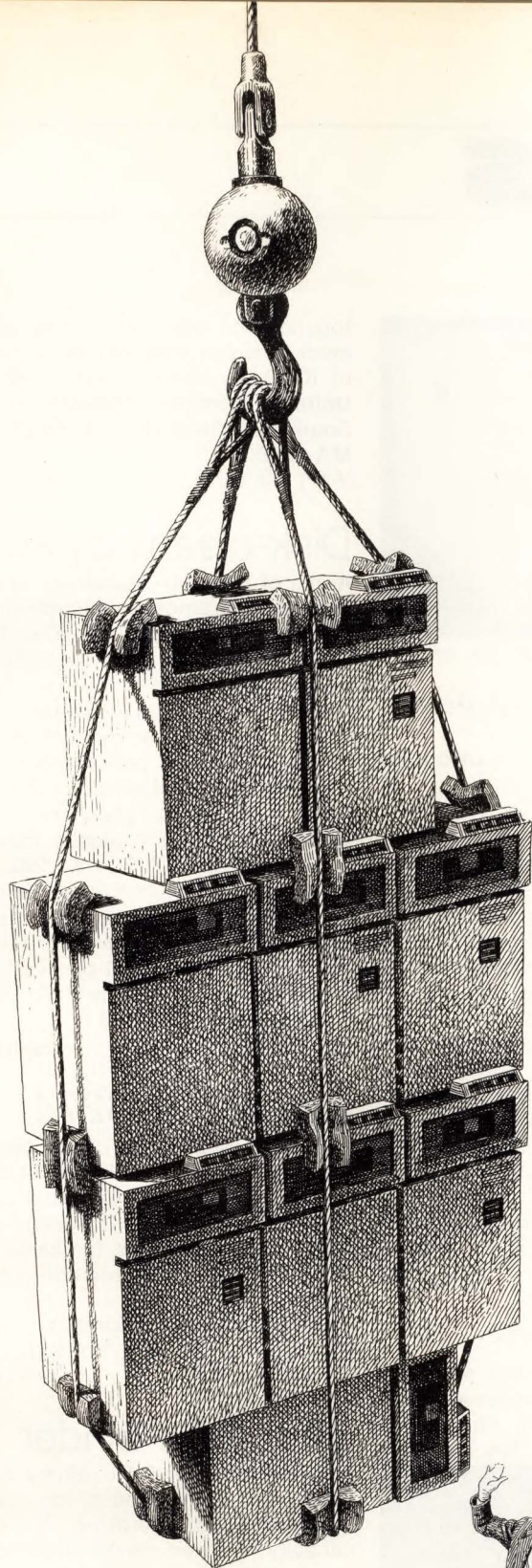
CIRCLE 211

Disk protection

A Disk Drive Cleaner, which is loaded into the disk drive like any disk, cleans debris from the interior of the drive. A program listing prevents dirty areas from being reused. Price: \$25 and \$30 for 5 $\frac{1}{4}$ - and 8-inch format. The Disc-keeper Shielded Floppy Disk Storage System is a three-sectioned folder to store two or four disks plus the Disk Drive Cleaner. Three configurations are available at \$13, \$15, and \$17.

Discwasher, 1407 N. Providence Rd., Columbia, MO 65205.
(314) 449-0941.

CIRCLE 212



How to put 640 square feet of computer disk storage in a 7'x3' space.

It's impossible to store all that data in such a small space using disk drives, even 3380 class. You have to use a different kind of data storage technology: Masstor Systems' M860 Mass Storage System.

The M860 stores data on-line at one-quarter the cost of disk... using less than 4% of the floor space. It automates tape operations making processing much faster and much less expensive.

The M860 is a third storage alternative for your IBM and other plug compatible mainframes. One that offers more on-line storage capacity for new applications and requires no conversion of your existing programs. If you have Sperry, Honeywell, DEC/VAX or CDC mainframes, Masstor Systems also has an M860 solution.

The M860 is just one of a family of Masstor Systems strategic products that allows you to store, share and move data efficiently and economically.

To find out more, contact Dave Ball at Masstor Systems Corporation, 541 Lakeside Drive, Sunnyvale, CA 94086. (408) 737-2500. And cut your data storage problems down to size.

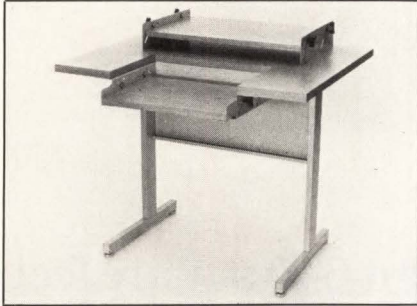
MASSTOR SYSTEMS

Strategic solutions to storing,
sharing and moving data.

ACCESSORIES

Ergonomic station

The Ergo-Tech workstations have a full range of adjustments to reduce operator fatigue. The height of the keyboard and display terminal is ad-

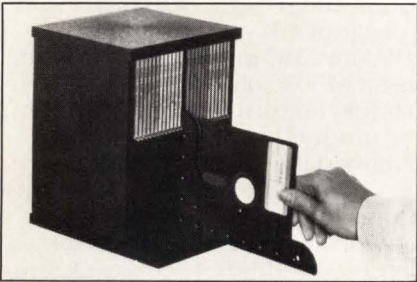


justable, and they can be moved toward or away from the operator. Price: \$295. Tops come in oak or walnut woodgrain, modesty panels in putty or black enamel.

James Systems Division, 2929 N. Oakley Ave., Chicago, IL 60618.
(312) 472-2611. **CIRCLE 241**

Floppy file

A Flexible Disk File holds up to 25 5¼-inch floppy disks in an upright position. The \$40 plastic file is 9¼ inches high, 8⅛ inches wide, and 8 inches



deep. It has built-in anti-static material and comes with labels.

Micro Development Inc., 2013 Orange St., Alhambra, CA 91803.
(213) 282-0563. **CIRCLE 242**

Uninterruptible power

Computersave, an uninterruptible power system for microcomputers, is available in three models. Computersave provides an emergency run time of 25, 17, and 15 minutes for the 500-Va, 750-Va, and 1000-Va units, respectively. The price for the 500-Va model is \$1,450; for the 750-Va,



\$1,650; and the 1,000-Va unit is \$1,935.

Computer Power Inc., 124 Main St., High Bridge, NJ 08829.
(201) 735-8000. **CIRCLE 243**

Noise filter

The Electra-Guard System 4 surge suppressor, suitable for personal computers and systems costing under \$3,000, has a filter that reduces both electromagnetic interference and radio-frequency interference, which can cause malfunctions. It filters "noise" common to copying machines, electric typewriters, and micro-controlled equipment. This \$80 solid-state clamping device can handle three pieces of equipment with a combined load of not more than 1,875 watts.

Computer Power Solutions Inc., 8800 49th St. N., Pinellas Park, FL 33565.
(813) 544-8801. **CIRCLE 244**

Anti-static mat

The Touch-Stat table-top mat protects terminals, word processors, and other data-processing equipment from static discharge. The operator



touches the mat before the equipment, draining away the static. A case of 10 23½-by-26-inch mats is \$69.

United Technical Products Inc., 32 Southwest Industrial Park, Westwood, MA 02090.
(617) 326-7611. **CIRCLE 245**

Disk-cleaning pack

A line of precision machinery detects defects and removes contaminants in magnetic disk packs. The Disc Pack Cleaning and Inspection Systems are available for 1316, 2316, 3336, 3336-11, 80-MB, and Trident Type Packs. A Universal System can be used on all these packs and has an optional spindle adaptor for the Burroughs 235 Media Type Pack. All the systems come in a plastic carrying case. Price is \$2,700 to \$4,150. Disc Pack and Disc Cartridge Cleaning Systems, which do not have inspection capabilities, can be purchased or can be rented for \$100 per week.

Texwipe Co., P.O. Box 308, Upper Saddle River, NJ 07458.
(201) 327-9100. **CIRCLE 246**

Stacker for 3274

Two IBM 3274 controllers can be stacked in the \$395 Conley Stacker, saving space in a nonexpandable computer room. The 16-gauge-steel unit has access holes for cable and "dimples" to keep the top controller in place.

Conley Business Equipment, Dept. 3, P.O. Box 186, Buffalo, NY 14221.
(716) 634-7716. **CIRCLE 247**

Microfiche binder

A three-hole panel Microfiche Easel Binder can form an easel for viewing and one-hand operation. It has a capacity of seven panels and can be purchased with or without the panels. Price: \$9.

Eichner Systems, 1789 Norwood Ave., Itasca, IL 60143.
(312) 893-1600. **CIRCLE 248**

Crt furniture: A brochure describes an adjustable keyboard shelf in the Steelcase (Grand Rapids, MI) 9000 line. In the same line is an open-frame panel which, with a carousel, allows two workstations to share a display terminal. **CIRCLE 249**

Robotic Disk Handler

RDH-100S ADC's standard-setting disk handling peripheral that allows any computer to mass-produce diskette copies!



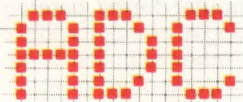
Now PC-to-minicomputer users can easily make either multiple 8" or 5¼" "floppie coppies"—and convert the RDH-100S from one to another in under 4 minutes!

Single-Format Software Developers, System Integrators and Large Distributed System Users: Your computer can get the added capability of "Floppie Copier™" with the simple RS232 interface of ADC's high-performance Robotic Disk Handler—Model 100S. Automatically loading and unloading up to 100 diskettes without operator intervention, the RDH-100S uses patented gentle fingers

that eliminate the disk destruction risk of other, not-so-sophisticated handlers. The RDH-100S is highly reliable, too—over 4000 hours MTBF and only 0.5 hours MTTR!

Multiple Format Users: ADC offers you both low-volume and high-volume "Floppie Copier" systems to choose from—the IC-455 controls simultaneous dual sided copying of 8", 5¼" and 3½" diskettes. ADC's IC-475 loads all your floppy data into a built-in winchester which can then direct the RDH-100S to produce the desired number of copies for each successive floppy. And for high-volume production, ADC's new Series 4000 can control up to 16 simultaneous diskette handlers—each with its own built-in RDH—and you can copy both sides of double-sided diskettes at once!

Whatever your "Floppie Copier" needs, ADC has the system to suit you—and you're assured of high-speed efficient duplication with the Robotic Disk Handler!



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COST CUTTERS

Portable stations

Teleram's portable model T-3000 and its desk-top office station/portable combination have been reduced in price. A T-3000 with Teletext text-editing software kit is \$1,595 with 158-Kbyte nonvolatile bubble memory and \$2,085 with 256 Kbytes. The T-3000 with desk-top T-3500 Office Station is \$2,995 with 128-Kbyte memory and \$3,495 with 256 Kbytes. This combination offers office-interface console, one floppy disk (two or four also available), floppy-disk interface card, and crt interface with cabling. The crt monitor is \$200 extra.

Teleram Communications Corp., 2 Corporate Park Dr., White Plains, NY 10604.

(914) 694-9270.

CIRCLE 233

Lisa unbundled

The Lisa personal-computer hardware and software can now be purchased separately with an overall reduction in price. A 1-Mbyte, 32-bit 68000 system with 5-Mbyte Winchester and two floppy-disk drives is \$6,995. Six productivity applications are each priced from \$195 to \$395. The set of six is \$1,195, a saving of \$675. The previous price for the system and applications was \$9,995. The six applications with Apple Dot Matrix Printer and a parallel card can be bought for \$1,495.

Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014.

(408) 996-1010.

CIRCLE 234

DECmate options

A 10-Mbyte Winchester disk drive is an option for the DECmate II. It's user-installable in the existing box and offers almost 12.5 times the storage of the average floppy-diskette system. Price: \$2,745. The WPS word-processing option now includes List/Sort/Math and communications. Price: \$995, which is \$105 less than the previous bundled price. Another option allows exchange of data between WPS and CP/M application programs so that popular industry-available soft-

ware can run on DECmate II systems. Price: \$695.

Digital Equipment Corp., Maynard, MA 01754.

(617) 897-5111.

CIRCLE 235

Graphics system and design terminal

Prices are reduced on the five models of the Whizzard 7200 family of graphics systems. Designers can work in 2D or 3D on color or monochrome, vector-refresh or color-raster systems with pixel resolution of up to 1,024 by 1,024. A wide range of options is available. A typical color-raster system with 512-by-512-pixel resolution, previously \$68,000, is now \$54,000. A system with 1,024-by-1,024-pixel resolution is reduced from \$82,000 to \$65,600. The Model 1650, 19-inch color-raster engineering terminal, which provides high-resolution, 2D interactive graphics, has been cut from \$14,900 to \$9,900. Model 1645, a monochrome terminal with a higher resolution, was \$13,900 and is now \$8,900. The company also has a new medium-priced 2D graphics system that features a full range of graphics functions, high resolution, color-raster display, real-time dynamic-transformation capability, VT-100 emulation, and migration path to a 3D system. The 3355 is priced at \$22,500.

Megatek Corp., 9605 Scranton Rd., San Diego, CA 92121.

(619) 455-5590.

CIRCLE 236

Picturephone rooms

AT&T's Picturephone Meeting Service room equipment has been reduced in price. A typical installation, formerly \$468,000, is now \$335,000. In addition, there is a new model of the picture processor, the system's key component. It has multispeed capability and allows for simultaneous viewing of graphics and conference participants from distant locations.

AT&T Information Systems, 100 Southgate Parkway, Morristown, NJ 07960. (201) 898-8000.

CIRCLE 237

Dot-matrix printers

A line of Qantex dot-matrix printers has been reduced. The \$1,495 Model 7020 runs at 75 and 180 cps and offers graphics. Model 7030, priced at \$1,695, offers multiple speeds, multiple fonts, and multiple modes of operation including word-processing and letter-quality. The \$1,795 Model 7040 is a plug-compatible replacement for most fully-formed-character printers.

Qantex, 60 Plant Ave., Hauppauge, NY 11788.

(516) 582-6060.

CIRCLE 238

Economical PBX

The Harris 400 telephone switching PBX system has a variety of cost-saving features. It transmits data at 9,600 bps up to 4,000 feet with no additional software or modems. Calls are automatically directed to the least costly route. System parameters can be entered and changed with a personal computer. The 240-address main cabinet can be doubled with an extension cabinet. The system can be integrated into a tandem network. It costs under \$500 per line installed in a standard configuration.

Harris Corp., Digital Telephone Systems Div., Novato, CA 94948.

(415) 472-2500.

CIRCLE 239

Cache memory cut

There have been price reductions on Point 4's Mark series multi-user systems, multiplexers, disk subsystems, and software. For example, Lotus Cache Memory has been cut 25 percent to \$3,200. A catalog of the new pricing structure may be obtained from the company.

Point 4 Data Corp., 2569 McCabe Way, Irvine, CA 92714.

(714) 863-1111.

CIRCLE 240

Computer-forms catalog: A 56-page catalog of computer forms, stationery, and other supplies is available from Nebs Computer Forms of Groton, MA.

CIRCLE 260

What do you get when the biggest name
in computer graphics joins the biggest name
in personal computers?



Not just business graphics. Genigraphics.

There are two kinds of business graphics.

Ordinary graphics. And Genigraphics®.

Combine the incredible IBM® personal computer with Genigraphics software and you've got access to more business graphics power at your own desk than you ever thought possible. Plot up to four charts at a time, use automatic layout features for text visuals. Create original drawings or choose from a selection of preprogrammed graphics. Translate spread sheet data directly into graphics.

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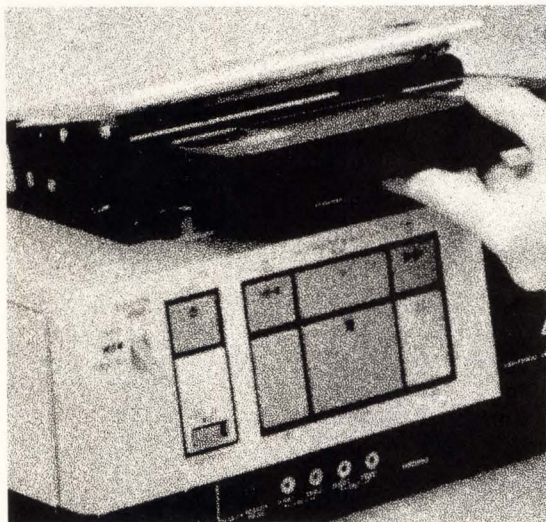
Join them. Insist on Genigraphics.

Learn how to expand the IBM PC into a powerful desktop graphics center. Contact Genigraphics Corp., P.O. Box 591, Liverpool, NY 13088

CIRCLE 111

A major announcement from Hayden Book Company and AT&T Bell Laboratories...

Hayden begins exclusive distribution of UNIXTM System Videotapes



These are the first in an ongoing series of AT&T Bell Laboratories' Software Technology Videotape Series. These first two tapes visually explain UNIX System concepts, provide precise guidelines for use and graphically demonstrate UNIX capabilities. Featured are UNIX pioneers Kenneth Thompson, Dennis Ritchie, and Brian Kernighan.

First two tapes now available:

Tape 1: "Making Computers Easier to Use."

Explains all concepts of the UNIX System and shows you how to build new applications programs. BETA format #6725, VHS format #6700, 3/4" format #6716.

Tape 2: "Making Computers More Productive."

Demonstrates features and versatility of the UNIX System, and thoroughly explains vital concepts such as "software tools." BETA format #6726, VHS format #6701, 3/4" format #6717.

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(Kochan) An AT&T Bell Laboratories' book. Complete introduction to the commands and utilities of the UNIX Operating System. Covers the older Version 7 and newer System III. Comes with examples. For the novice or experienced owner. **#6268, \$18.95**

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(Kochan) Invaluable text covering AT&T Bell Laboratories' programming language with special emphasis on using C in the UNIX System. More than 90 C programs illustrate all the important principles of structured C programming and syntax. **#6261, \$18.95**

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SOFTWARE

DEC DBMS

Version 116 of the System 1022 database management system for the DECsystem 10 and 20 has two special features to integrate separate data files. A Collect command consolidates similar files from different departments or calendar periods, such as expense reports, so they appear as one data set. A Join operator links dissimilar file types across common field values. A typical license costs \$32,500 for the DECsystem 2060.

Software House, 1105 Massachusetts Ave., Cambridge, MA 02138.
(617) 661-9440. **CIRCLE 213**

VSAM file access

VSAMaid/XP is an improved version of a disk-access method for IBM installations. It eliminates the task of manually tuning VSAM files to control the efficiency and size of a file. It collects and analyzes file information, reduces waste of space through use of mathe-

matical algorithms, and reduces overhead by helping determine optimum virtual-storage allocation. Three different report utilities provide analyses and statistics for this VSAM file tuning. Price: for OS/VS, \$5,040 or \$126 monthly; for DOS/VSE, \$3,080 or \$77 monthly.

Goal Systems, 5455 N. High St., Columbus, OH 43214.
(614) 888-1775. **CIRCLE 214**

Librarian options

The Librarian Access Method interface is an option to the Librarian source-program-management system for OS/MVS. It enables language processors and utilities to access data in the master files without programming changes and allows multiple members from different master files to be concatenated into a single job stream. Price for MVS is \$11,200 for the option. ADR/eDate is an electronic calendar and scheduling option for ADR/eMail users, operating on IBM

and compatible mainframes under OS and DOS. Price is \$10,000.

Applied Data Research Inc., Route 206 and Orchard Rd., CN-8, Princeton, NJ 08540.
(201) 874-9000. **CIRCLE 215**

Information center

An MVS/TSO version of the Nomad2 Information Center service is available for \$130,000. It includes a data-definition language, nonprocedural report writer, statistical package, and financial-modeling package. Price also covers training courses, documentation, and training aids.

D & B Computing Services, 187 Danbury Rd., Wilton, CT 06897.
(203) 762-2511. **CIRCLE 216**

Public databases with DG: DG/Gate terminal-emulation software from Data General (Westboro, MA) gives access to public databases such as Dow-Jones News Retrieval.

CIRCLE 217

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CD-2

RESEARCH REPORT

MICRO-TO-MAINFRAME COMMUNICATIONS HARDWARE & SOFTWARE MARKETS

- Describes rapidly-growing market for subsystems and software to permit communications between microcomputers and mainframes.
- Analyzes attempts to modify DBMS mainframe software for easy micro access to corporate mainframe data bases.
- Reviews significance of 3270 emulation and protocol conversion products, and links these to the announcement of the 3270-PC.
- Considers the significance of 32-bit desktop micros with 4300 and 370 compatibility, and positions the XT/370 in this context.
- Presents results of a survey conducted with MIS directors of 40 selected "leading edge" users, largely of Fortune 100 Companies, detailing current attitudes, activities and plans in micro-to-mainframe communications.
- In-depth analysis of the major expected future trends to influence the micro-to-mainframe market, addressing hardware and software issues and the future role of the MIS department in large-organization environments. Trends reviewed are translated into estimates of future market sizes.
- 224 pages; 44 exhibits; published November 1983; price \$1,850.

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SOFTWARE

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Collier-Jackson, 5406 Hoover Blvd., Tampa, FL 33614.
(813) 885-6621.

CIRCLE 218

VM/370 manager

Capture/VM is an interactive package that manages the capacity and reports on the performance of the VM/370 system. It allows capacity planners to identify and correct imbalances in workload among system components. It summarizes performance data from the VM Monitor and compiles reports in categories determined by the user. Price: \$9,000.

BGS Systems Inc., One University Office Park, Waltham, MA 02254.
(617) 891-0000.

CIRCLE 219

Cross-reference tool

Libxref, a cross-reference and documentation-productivity tool for IBM mainframes, has been enhanced with a User Report Generation Package. Priced from \$1,500, it allows the user to report and manage all cross-reference data and has features to extract and select relationships for loading to a data dictionary.

Multitask Inc., 1007 Farmington Ave., West Hartford, CT 06107.
(203) 232-2142.

CIRCLE 220

Color plotting

Versaplot Color Random supports electrostatic plotting in color as well as black and white and runs under DEC VAX/VMS and IBM OS/CMS. It provides for eight line colors, 256 pre-defined area colors, and 256 user-defined colors. Output can be directed to online plotters, magnetic tape, or remote devices. A system can plot a

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(408) 988-2800.

CIRCLE 221

File transfer for IBM and VAX

Release 2.0 of the SPSS-X Information Analysis System, for IBM/CMS, IBM/MVS, and DEC's VAX/VMS, features an Import/Export facility. This enables it to transport data and dictionary information across machine types. Users can share access to the information, which is held in portable data files. Initial license fee is about \$4,000, varying with the configuration.

SPSS Inc., 444 N. Michigan Ave., Chicago, IL 60611.
(312) 329-2400.

CIRCLE 222

Multiple database

Multiple Mapics Environment System is a user-friendly multiple database system that allows users of System/38 Mapics to maintain and utilize up to 35 unique and independent database entities from a single cpu. It allows Mapics users to work in an interactive mode with any installed Mapics applications and Marcam products. Single-thread users can be kept online while running test, education, or demo systems. Price: \$1,900.

Marcam Data Systems, 123 Highland Ave., Needham, MA 02194.
(617) 449-5510.

CIRCLE 223

IBM ledger

The BMS/General Ledger, which automatically interfaces with the Business Modeler Financial Planning and Control System, is compatible with IBM System/34, /36, and /38. It has a number of features to simplify management reporting, increase flexibility, and provide for individual user control. Price: \$5,000 for System/34 and /36; \$7,200 for /38. If purchased with Business Modeler, the combination price

is \$11,600 for System/34 and /36, and \$16,950 for /38.

Business Model Systems Inc., 2625 W. Butterfield Rd., Oak Brook, IL 60521.

(312) 789-9160.

CIRCLE 224

VAX accounting

Maps/AP is an integrated, interactive accounts-payable package for the DEC VAX. It handles sophisticated payables processing, check writing, vendor information, cash management, inquiries, and reports. Special features include distribution preview, user-defined reports, and security. Price is \$15,000 to \$20,000, depending on VAX model. It can also be used as a complement to the company's general-ledger/financial-management package, Maps/GL.

Ross Systems, 1860 Embarcadero Rd., Palo Alto, CA 94303.
(415) 856-1100.

CIRCLE 225

IBM spreadsheet

An enhanced version of the Megacalc electronic spreadsheet increases data input and execution speed by 200 percent. It can be used on IBM 370, 43XX, 30XX, and plug-compatibles, as well as TSO, Roscoe, and Tone, and displayed on IBM 3278 terminals, models I through V, and 3279 terminals. This version adds 10 functions, including macro-commands and stacking commands. Lotus 1-2-3, Visicalc, and Supercalc can be uploaded and downloaded with Megacalc. Price: \$15,000 to \$19,000, depending on mainframe.

The Mega Group Inc., 2091 Business Center Dr., Irvine, CA 92715.
(714) 752-9533.

CIRCLE 226

Modules for DEC

The online, interactive Labor and Data Collection System for DEC systems consists of three modules: Human Resources Management (HRM), which provides a complete employee record; Time and Attendance (T&A); and Shift and Labor Reporting (SLR), which provides an online timekeeping function against production orders. Price: \$10,000 for HRM and T&A, and \$15,000 for SLR.

Interactive Information Systems, 10 Knollcrest Dr., Cincinnati, OH 45237.
(513) 761-0132.

CIRCLE 227

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- Parameter subscripting
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- Character
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Softalk, May 1983

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HAYDEN SOFTWARE

PERIPHERALS

Compatible terminal

The Model 5 monochrome display station is plug-compatible with the IBM 3270 family and can be connected to a Trivex 8074, IBM 3274, or IBM 3276 controller. It can function under bisync



or SNA/SDLC protocols. A 75- or 87-key keyboard may be chosen for the same price of \$2,350. Several options are available.

MDS Trivex, 3180 Red Hill Ave., Costa Mesa, CA 92626.

(714) 546-7781.

CIRCLE 261

Small terminal

The ADM 12 ergonomic video display fits on an executive's credenza or secretary's typewriter return. It has variable display-memory format for financial, word-processing, and general data-processing applications. It also features five visual attributes and 16 nonvolatile function keys, each programmable to transmit up to a four-character code sequence. Price: \$895.

Lear Siegler Inc., 714 N. Brookhurst St., Anaheim, CA 92803.

(714) 774-1010.

CIRCLE 262

VAX memory

The PM-S750 1-Mbyte MOS memory board is compatible with the DEC VAX-11/730 and -11/750. It features Error Correction Code and battery backup. The memory can be switched offline for troubleshooting. Price: \$2,275.

Plessey Peripherals Systems, 1674 McGaw, Irvine, CA 92714.

(714) 540-9945.

CIRCLE 263

Color printer

Colorplot II printer/plotter produces up to 256 colors and both line and graphics printing. It prints 75 to 300 lines per minute. A 100-by-100-dots-per-inch resolution gives the \$6,900 machine contiguous-plotting capability for precise circles, arcs, and diagonal lines. A dual print head provides backup for nonstop printing.

Trilog Inc., 17391 Murphy Ave., Irvine, CA 92714.

(714) 863-3033.

CIRCLE 264

Editing terminal

Teleray's 7-DEC smart editing terminal is software-compatible with DEC's VT102 and Teleray Model 10. In a user-definable mode it can emulate a variety of asynchronous terminals. The \$1,370 unit has an extended ANSI code set and up to four pages of volatile or nonvolatile memory. Other features are two buffered bidirectional RS-232 ports, four resident character sets, and several display attributes. Musical operator alerts are programmable sequences of up to 16 tones. It comes with white, green, or amber display in 9-, 12-, or 15-inch crt.

Teleray, P.O. Box 24064, Minneapolis, MN 55424.

(612) 941-3300.

CIRCLE 265

Smart terminal and printer options

The TTX 3003 Smarter terminal is compatible with most micros, minis, and mainframes, as well as with Western Union Telex Easylink. It features a range of visual attributes and text-editing functions. It has 128-character ASCII display with 32 displayable control codes, numeric keypad, N key rollover, and two-page screen memory. Price: \$699. TTX 1014 Desktop Daisy-wheel printer has optional sheet feeder and print buffer that is expandable from 8 to 64 Kbytes. Interface requirement can be converted back and forth from RS-232C to Centronics parallel. The logic-seeking, letter-quality printer, compatible with most

micros and minis, is \$649. The sheet feeder, which stacks as many as 200 sheets of varying weights and widths up to 12 inches, is \$399. The buffer ranges from \$149 to \$264.

Teletex, 3420 E. Third Ave., Foster City, CA 94404.

(415) 341-1300.

CIRCLE 266

Terminal controller

An IBM 3274-61C-compatible terminal-control unit gives the host both binary synchronous and SNA/SDLC communication capability. The CTi 3000/3 supports standard IBM Category-A terminals as well as other manufacturers' plug-compatible devices. Standard transmission speed is up to 9,600 bps. There is a separate port for diagnostic testing.

CTi Data Corp., 5275 N. Boulevard, Raleigh, NC 27604.

(919) 876-8731.

CIRCLE 267

Laser printer

The IBM-compatible 6100 Printing Subsystem uses laser technology and electro-photography to print up to 103 pages per minute. Font sizes and character densities can be changed within a line, and line density can be changed within a page. Forms and data can be printed simultaneously. A buffer holds one or more pages of information. Price: \$195,000.

Storage Technology Corp., 2270 S. 88th St., Louisville, CO 80028.

(303) 673-5151.

CIRCLE 268

Display terminal

The Freedom 200 Video Display Terminal emulates the Televideo 950 and Lear Siegler ADM-31 and is compatible with the Freedom 100. The \$745 terminal offers 12-inch screen with tilt and swivel, 106 keys clustered by function, 86 extended graphic characters, nonvolatile memory, buffered auxiliary port, split screen and scrolling, programmable hand-shaking protocol, and a range of user-programmable features.

Liberty Electronics, 625 Third St., San Francisco, CA 94107.

(415) 543-7000.

CIRCLE 269



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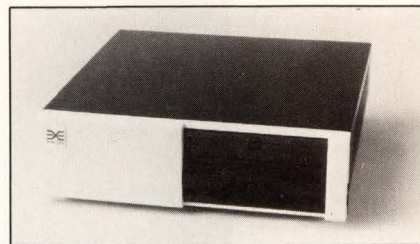
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CIRCLE 250



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(714) 662-5600.

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A DEC-compatible CSS-800 Winchester storage system features larger cache memory, decreased access time, and improved throughput over previous models. A system with 70 Mbytes of disk, $\frac{1}{4}$ -inch cartridge backup, Q-bus interface, and 32-Kbyte caching controller is \$9,995. A 64-Kbyte cache option for Q-bus and Unibus systems costs \$700.

U.S. Design Corp., 5100 Philadelphia Way, Lanham, MD 20706.
(301) 577-2880.

CIRCLE 254

Low-cost printer

The desk-top Model LCQ50 dot-matrix printer has correspondence-quality capability. It has an ASCII character set and seven international character sets, and it supports 24 print-font combinations. The \$535 printer operates at 150 characters per second in draft mode or 90 cps in enhanced mode and has a 256-character-receive buffer.

Plessey Peripheral Systems, 17466 Daimler, Irvine, CA 92714.
(714) 540-9945.

CIRCLE 251

Distributed dp

Model 21/10 single-station distributed data-processing system has increased memory capacity to 256 Kbytes. Other enhancements of this model are 5 to 15 Mbytes of fixed disk, double-sided double-density diskettes with 1-Mbyte capacity, SDLC communications, and an 80-cps printer. Price: \$6,000 to \$20,000, depending on configuration.

Mohawk Data Sciences, 7 Century Dr., Parsippany, NJ 07054.
(201) 540-9080.

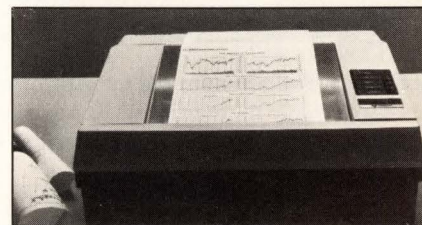
CIRCLE 252

LSI-11 Winchester

The Sabre $5\frac{1}{4}$ -inch Winchester disk subsystem, which includes an 8-inch cartridge disk for backup, runs under all DEC LSI-11 operating systems. It provides total storage capacity of 41.6 Mbytes under RT11, RSX11M, and RSTS/E operating systems. The subsystem is software-transparent and permits attachment and concurrent operation of other host adapters or SCSI-compatible peripherals on the

Engineering plotter

The Versatec V-80 printer/plotter can serve engineering workstations with the IEEE-488 interface. The interface, mounted on a printed circuit board, fits inside the V-80. Features include



unattended operation and integral self-testing. Price for the V-80 with interface is from \$7,444.

Versatec, 2710 Walsh Ave., Santa Clara, CA 95051.
(408) 988-2800.

CIRCLE 255

Software for Magna SL: CP/M Release 2.2 makes A.B. Dick's Magna SL system compatible with more than 100 programs, including Supercalc spreadsheet and Microsoft Basic. Software can be ordered from Lifeboat Associates (New York). **CIRCLE 256**

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Peter Olivieri
"Softalk"
March 1983

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Dictaphone Dual Disp.	dedicated word processor*	\$13,500	85 1/4
PIE:Writer:	Apple II, IBM PC	\$149.95 \$199.95	84 1/4
WordStar	CP/M†, Apple II, IBM PC	\$500	80
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TRAINING

(Continued from page 76)

make their contribution to establishing training goals. They can start by defining a department's or a group's training needs, rather than following a rule of thumb (there isn't one) or taking a vendor's advice. ("They'll sell you anything," says Shapiro.)

"Managers know what projects are going to be worked on in the coming months, and they know each employee's strengths and weaknesses," Tilton says.

Under management's direction, each training objective must be assigned a priority. "Try to understand what objectives a particular business division or component is supporting," advises Delaney. "Also, try to work in long-term factors like technology trends, industry trends, and corporate strategies."

Managers charged with putting together a training program should gather information by using questionnaires, conducting interviews, or "by having lunch with the right people," Delaney says. He agrees with the maxim that training should serve the individual worker, but he also believes a broader focus is needed. "Everybody from the lowest programmer to the systems-division executive can detail his or her skills gap," Delaney says. "As you gather information, talk to all the key managers at all the major levels within the organization to get a richer picture of corporate needs."

The importance of management's support does not diminish after objectives are established. "It doesn't matter how good the classes are, or how well they meet objectives, if managers won't set aside time to let the employees take them," Tilton says. For a training program to fulfill its promise, management must stay involved and attentive as training conditions and priorities change. □

This is the first in a series of bi-monthly columns on training. Future columns will examine the forms of available training, the appointment and responsibilities of a training director, financing a program, and evaluating its worth.

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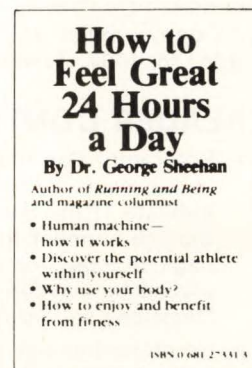
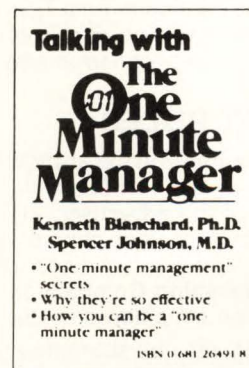
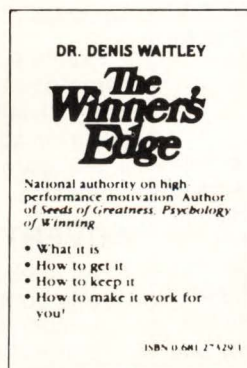
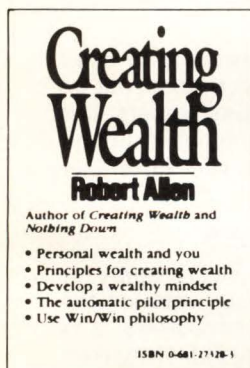
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1984 Top 10 Contest Rules

Pick the *Top 10* advertisements in this issue... Win a Princess Caribbean Cruise for two plus \$500 in cash... Zenith 25" Color tv... Panasonic Video Cassette Recorder... Panasonic Multi-Band Radio.

Reader Contest

Examine this issue of **Computer Decisions** with extra care. Pick the ten advertisements that you think your fellow computer management-subscribers will best remember having read. List these ten advertisements on the special entry form bound in this issue. (*Be sure to check the box marked "Reader Contest."*)

This year your selection will be measured against the ten ads ranking highest in the "Recall Read" category of Reader Recall, **Computer Decisions'** method of measuring readership—see item 6.

In making your choices do not include "house" advertisements placed by **Computer Decisions** or Hayden Publishing Company, Inc. (such as this ad describing the contest). Don't miss your chance to be a Top 10 Winner! *All entries must be postmarked no later than midnight, April 15, 1984. Winners will be notified in May 1984.*

READER CONTEST RULES

1. Enter your *Top 10* selections on the entry blank bound in this issue or on any reasonable facsimile. Be sure to indicate 1) the name of the advertiser; 2) the Reader Service Number for each of your choices; and 3) the page number for each of your choices. (House ads placed by Hayden Publishing Company in **Computer Decisions** should not be considered in this contest.)
2. No more than one entry may be submitted by any one individual. Entry blank must be filled in completely, or it will not be considered. The box on the entry blank marked "Reader Contest" must be checked. **Computer Decisions** will pay postage for official entry blanks only.
3. To enter, readers must be engaged in MIS/dp or company management.
4. No cash payments, or other substitutes, will be made in lieu of any prize (except the \$500 prize).

5. Contest void where prohibited or taxed by law. Liability for any taxes on prizes is the sole responsibility of the winners.
6. Entries will be compared with the "Recall Read" category of Reader Recall (**Computer Decisions'** method of measuring readership). That entry which in the opinion of the judges most closely matches the "Recall Read" rank will be declared the winner.
7. In case of a tie, the earliest postmark will determine the winner. Decisions of *Top 10* contest judges will be final.
8. First prize is a Princess Cruise for two and \$500 in cash.

Advertiser Contest

There's a separate contest open to all marketing and advertising personnel in companies, and to advertising agencies.

Examine this issue of **Computer Decisions** with extra care. Pick the ten advertisements that you think will be best "Recall Read" by **Computer Decisions** readers. List these ten advertisements on the special entry blank bound in this issue. (*Be sure to check the box marked "Advertiser Contest."*)

ADVERTISER CONTEST RULES

1. All rules for the Reader Contest will similarly apply for this contest, with two exceptions: those entering the Reader Contest may not enter as advertisers, and entrants must check the box on the entry blank marked "Advertiser Contest."
2. Entrants in this contest may use the official reader contest entry blanks or any reasonable facsimile.
3. This special contest is open to marketing and advertising personnel at all manufacturing companies and advertising agencies, whether or not their companies or agencies have an advertisement in the contest issue.

Use special entry blank bound in this issue
(Blanks are also bound in the front of this issue)

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CIRCLE 112

Our IBM Protocol Converter is not the same under the skin.

MICOM's new Micro7400 is very, very different. It not only provides a Gateway for dumb asynchronous terminals to access IBM mainframe applications, but goes far beyond the basic capabilities of IBM 3270s and other protocol converters. *It's even easy to use.*

Since MICOM is the world's largest volume manufacturer of data concentrators—thanks to its Micro800/2 "Orange Box" family—it's only natural that MICOM's protocol converter should include the same features and capabilities that made the data concentrators so popular. And fortunately for asynchronous terminal users wishing they could connect to IBM mainframes, and for mainframe DP managers looking for less expensive terminals, adding concentrator features to a converter makes for a surprisingly effective hybrid.

All Standard IBM 3270 Features

Functioning as an IBM 3274 Model 51C Cluster Controller using either Bisync or SNA/SDLC protocol, the Micro7400 allows ASCII terminals (or personal computers emulating terminals) to perform as 3270s. Display terminals emulate IBM 3278s; printers emulate IBM 3287s. And special software allows printer terminals to interact with full-screen programs originally developed for crt's.

Plus Extra Functions

The Micro7400 also offers features not available in the IBM 3270 line, including dial-up access to the protocol con-

verter, terminal-controlled diagnostics, and do-it-yourself channel configuration for setting terminal-related parameters like parity.

Support for IBM Personal Computers

IBM PCs connected to the Micro7400 can emulate IBM 3270 terminals, too, for communicating with mainframes. Diskette-based MICOM software makes it easy.

Switching Between Multiple Hosts

Users can switch between two IBM hosts, or between an IBM host and asynchronous ports on one or more mini-computers—completely under terminal control.

Command Port

Unique among protocol converters, the Micro7400's Command Port allows a network manager to dynamically alter operating parameters like priority assignment, as well as providing monitoring, diagnostic, and control facilities.

As Low As \$400 Per Channel

Even the pricing is more like a concentrator. Standard models are available to support from two to 12 channels, at prices as low as \$400 per channel. A budget-minded 2-channel "LTD" model is also offered, as are cost-saving versions with built-in modems. And there's much more. Call today for a price list and a 12-page color brochure, or use the Reader Service Number below.



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