

COMPUTER DECISIONS[®]

APRIL 23, 1985

THE MANAGEMENT MAGAZINE OF COMPUTING

A HAYDEN PUBLICATION

IBM's grand design • The security dilemma • Power protection for micros



HUMOR:
THE MANAGEMENT EDGE

RAMIS II

ICP MILLION DOLLAR AWARDS

ONE
HUNDRED
MILLION
DOLLAR
CLUB

Having clearly evidenced its acceptability in the marketplace and its leadership as a proprietary software product in the past year

RAMIS II

has caused this award to be presented to

Mathematica Products Group, Inc.

Date April 26, 1984
[Signature]
President, ICP

100 Million Votes of Confidence

How do you measure success?

In the case of RAMIS II, it begins with satisfied users. In 1984, our customers made this product the first 4th-generation system to earn ICP's prestigious \$100 million sales award. A year later, with RAMIS II leadership still secure, we are fast approaching the \$250 million award.

By reinvesting more than twice the industry average in R&D, we have maintained our commitment to excellence and kept RAMIS II the technological leader in high productivity software. Our leadership position in product support remains equally secure.

Today, RAMIS II offers both computer specialists and end-users efficient, cost-effective productivity

tools. From full-capability relational processing and elegant uncomplicated screen painting to everyday English, menu-driven reporting, and micro-to-mainframe links, RAMIS II continues to stay ahead of the competition in quality, ease of use, and innovation.

Our efforts in developing quality software are backed by the commitment to technology of our \$4-billion parent corporation, Martin Marietta, a key force in such arenas as robotics, artificial intelligence, and the Space Shuttle program.

To learn how RAMIS II can bring your organization increased productivity and the success that follows, please call us or return the coupon.

RAMIS® II... THE LEADER BY DESIGN

MATHEMATICA

CD 4/23

P.O. Box 2392 Princeton, NJ 08540
1-800-257-5175

- ☐ Please send me a schedule of free RAMIS II Seminars.
☐ Please send more information describing RAMIS II.

Name

Title

Company

City State Zip

Telephone

Computer Operating System

MATHEMATICA

MARTIN MARIETTA

IT'S INEVITABLE. EVERY COMPANY WILL NEED A RELATIONAL DATA BASE TO COMPETE.



"Miss Elliot, it's inevitable every company will need a relational data base to compete. Can you please find out what a relational data base is?"

When corporate management needs information, the last thing they want are excuses. Or explanations, no matter how logical they may be.

But what else can you do when the data base you're using doesn't let you get to that information quickly. If you're lucky enough to get to it at all.

The solution, of course, is a relational data base. A data base that lets you give management the information they need, the way they need it, when they need it.

ADR/DATACOM/DB® is the only relational data base management system that lets you give management access to all the company information. Because the data base they use to manage the company is the same exact data base the company uses to operate. And ADR/DATACOM/DB does it without sacrificing performance.

ADR/DATACOM/DB lets managers use relational query languages like ADR/DATAQUERY®, decision support systems like ADR/EMPIRE® and, with ADR/PC DATACOM®, even their own personal computers to get the information they need themselves.

And programmers can use powerful productivity tools like ADR/IDEAL®, our 4th generation application development system, to create applications quickly and turn data into strategic information.

ADR/DATACOM/DB allows system changes to be made quickly and easily. So it gives your company the flexibility to compete in a changing business world.

And, most important of all, ADR/DATACOM/DB still delivers the performance production demands. In fact, it is the only relational data base management system being used for high volume production applications.

It's inevitable every company will need a relational data base because it removes the barriers that separate management from the information it needs.

And ADR/DATACOM/DB is the relational data base that does it best.

For more information about the inevitable, mail us the coupon. Or call 1-800-ADR-WARE.

ADR® WE KEEP WRITING THE HISTORY OF SOFTWARE

Applied Data Research® Orchard Road & Rt. 206, CN-8,
Princeton, NJ 08540 1-800-ADR-WARE. In N.J. 1-201-874-9000.

- ☐ Please send me more information about ADR/DATACOM/DB®
☐ Please send me information about ADR Seminars.

Name _____ Position _____

Company _____

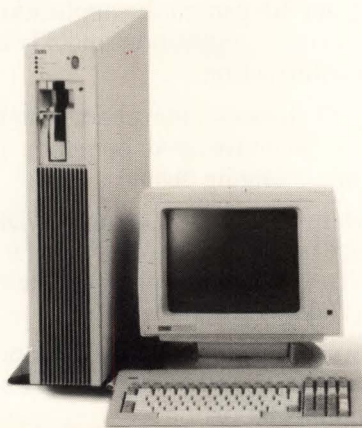
Address _____

City _____ State _____ Zip _____

Phone Number _____

Computer Equipment _____

SOMETIMES YOU NEED MORE THE QUESTION IS,



THE MINI TOWER

Maybe you run a small business. A department of a large business. Or a nationwide network of businesses.

No matter what size business you run, one of the NCR Towers™ above can help you run it better.

Because they all give your people a lot more speed, memory, storage and versatility than personal computers. For a lot less money.

MORE THAN A PERSONAL COMPUTER IN MORE WAYS THAN ONE.

The Towers utilize UNIX SYSTEM V* or

RM/COS* as their operating system. Which means they're perfect for the sophisticated user who wants to write his own programs, as well as for the beginner who can choose from hundreds of off-the-shelf solutions to his problems.

If your business or department has already invested in IBM or IBM-compatible personal computers (the NCR PC 4, for instance), you can use them as intelligent work stations with any of the Towers.

And, finally, the Towers can all stand



THE TOWER

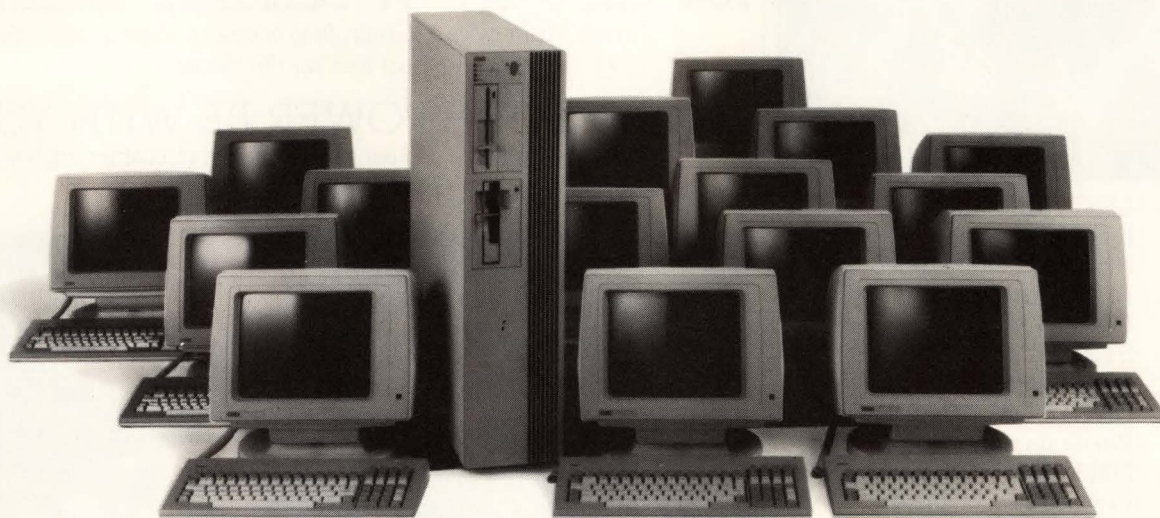
alone or be networked together. As well as communicate with other computer systems via SNA, X.25 and other industry standard protocols.

THEY PERFORM BRILLIANTLY BECAUSE THEY'RE BUILT BRILLIANTLY.

The Towers are all powered by Motorola microprocessors (the regular Tower by the 68000, the XP and Mini by multiple 68010's).

Other state-of-the-art features include Winchester hard disk and the Intel Multibus*. Not to mention an error-correcting memory

THAN A PERSONAL COMPUTER. HOW MUCH MORE?



THE TOWER XP

and a unique power-failure recovery system that enables all the Towers to survive power outages (thus keeping your data intact).

**PEOPLE WHO NEED MORE
THAN A PERSONAL COMPUTER DON'T
ALL HAVE THE SAME NEEDS.**

Of course, the Towers do have their differences.

You can choose from 512 kilobytes of memory to eight megabytes. From twenty-five megabytes of disk storage to 260 megabytes. From a system for one to eight

users to a system for up to sixteen users. Starting for as little as \$6,995.

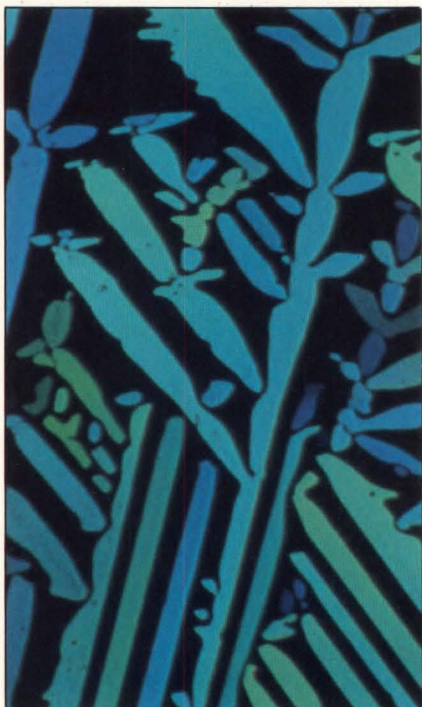
But no matter which Tower you choose, you'll choose a computer that's a good deal more than a personal computer. And one which is backed by service from 1,200 offices throughout 120 countries.

Which means that in addition to getting all the computer you need, you'll get all the support you need.

For more information on the NCR Towers, dial us toll-free at 1-800-CALL NCR.

NCR

**INNOVATIVE COMPUTER TECHNOLOGY.
YOU CAN EXPECT IT FROM NCR.**



COVER STORY

70 LAUGHTER GIVES YOU AN EDGE/

Martin Lasden *A well-timed joke can often smooth frustrations in the office.*

82 IBM'S GRAND DESIGN/ Robert A. Moskowitz

Big Blue is counting on System Network Architecture to be a long-term data-network standard.

92 AUTOMATED TOOLS ARE BACKLOG BREAKERS/ Rick Cook

Programming-productivity tools can cut through applications logjams.

104 SECURITY: A DELICATE BALANCE/

James Miskiewicz *Controlling access to data facilities has become more complex than just locking the doors.*

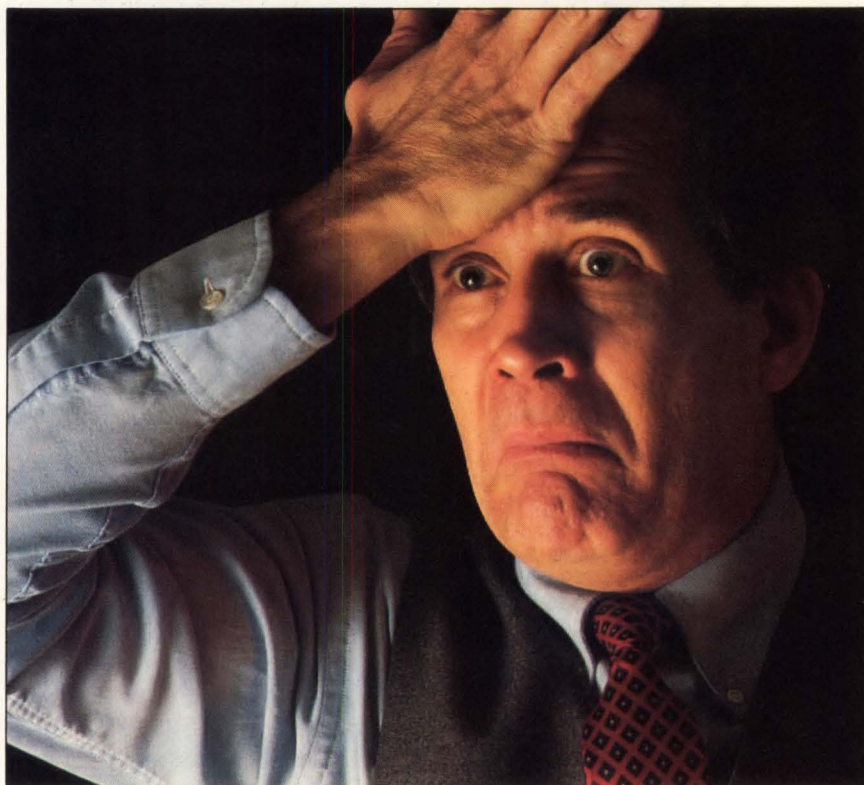
116 MAY THE POWER BE WITH YOU/

David Morrison *Power problems can devastate high-level users of microcomputer systems.*

- 6 LETTERS 82
12 INSIGHT
16 NEWS & COMMENT
40 PERSONAL COMPUTING
User groups
46 STRICTLY SOFTWARE
Report writers
56 DATA COMMUNICATIONS
What's up with the 3274?
62 FOLLOWING THE LEADERS
Compaq's life on the edge
66 TRAINING
Curing keyboarditis
145 PRODUCTS
153 ADVERTISER INDEX
154 YOUR CAREER
The charm factor

COMPUTER DECISIONS (USPS 771-040 ISSN 0010-4558) is published 26 times a year for \$35 per year by Hayden Publishing Co., Inc., 10 Mulholland Dr., Hasbrouck Heights, 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.

COVER PHOTO: Bob Ward



Fifteen Years Ago Software International Created The Mainframe Applications Software Industry. Today We're About To Change Its Course.

Fifteen years ago packaged software was an idea. Today it's an industry. Unfortunately, it's an industry that's never proposed a set of standards for itself... never spoken clearly to its customers about standards for product architecture or service or support... never put into words the standards that characterize a true level of professionalism in a software vendor.

That is until now.

Enter Software International.

Fifteen years ago we brought our first financial software package to the marketplace. Since then we have installed more than 5000 packages. And now, as a member of the General Electric family of companies we feel we are in a position to speak out and help chart our industry's course for the next fifteen years.

We've put our thinking into a 35-page white paper "Setting Standards in Mainframe Applications Software." We'll send you a copy at no cost.

The paper presents 16 topic areas that we believe to be critical to the long term success of applications software installations... important ideas for those who purchase or recommend applications packages.

It talks about the coming generation of architecture for software products and what that means to you... it suggests the kind of installation, support and service a user should expect from his software vendor.

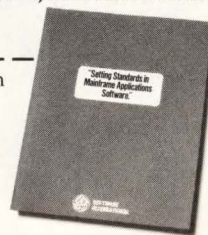
Whether you're developing your own software, or evaluating a package, you'll want a copy of this timely report. It'll give you new insight into the direction the mainframe software industry is heading.

And a fresh look into the thinking that goes on here at Software International.

For a copy call 1-800-343-4133, in Massachusetts 1-800-322-0491.

Software International Corporation
One Tech Drive
Andover, MA 01810

Dear Sirs: Please send me a copy of
"Setting Standards in Mainframe
Applications Software."



Name/Title _____
Company _____
Address _____
City _____ State _____ Zip _____
Phone _____

CD-2



**SOFTWARE
INTERNATIONAL**

SECURITY, NATURE'S WAY.

Our Security System Does Something Nature Doesn't Do. It Protects The Data In MVS, VS1 And VM Environments.

Only one security software is the accepted standard for OS/VS environments: ACF2, Access Control Facility.

Over 1500 organizations, including many Fortune 500 companies, trust ACF2 for access control because it gives peace-of-mind against unauthorized disclosure, modification, or destruction of data. ACF2 is also rated as C-2, the highest rating awarded by DoDCSC for OS/MVS.

With ACF2, all data is protected automatically—by default. Authorization access is granted based on a need to know. This avoids confusion, assignment mistakes, and oversights.

Installation is fast. Implementation is painless. Critical data sets can be protected first, while less critical data can be secured in stages to avoid disruption of daily work routines.

All system resource accesses are monitored and controlled as they occur. A complete audit trail provides total accountability.

Surprisingly, all this control uses a minimum of administrative and machine overhead.

To see the security software that makes the data world your oyster, call or write John Williams direct to arrange a presentation.

The Cambridge Systems Group



24275 Elise, Los Altos Hills, CA 94022, U.S.A.,
(415) 941-4558 • Telex 357437

ACF2 is developed by SKK, Inc., Rosemont, IL. 

CIRCLE 5

L E T T E R S

ENDING END-USER BLUES

Regarding your article "Bend or be broken" [December], I would like to offer what many regard an eminently workable solution to dp's end-user dilemma. Other than the understandable reluctance of some MIS/dp executives to admit outsiders to their empires, there's really only one major obstacle to resolving the end-user dilemma. That's the scarcity of high-quality, general-purpose software. To get both dp and end users moving in the same direction, a single software package is virtually mandatory. But to function well in the broad range of end-user environments, such software must be flexible and powerful enough to handle extensive and intricate applications, yet simple enough for even novice users to use effectively.

Satisfying both the flexibility and ease-of-use criteria has a double benefit. First, it reduces the support burden that dp must ultimately bear. Secondly, such software provides an intrinsic growth path for novices. As a result, both dp and end users experience tremendous improvements in productivity and information usefulness.

We can accept as fact that MIS/dp executives' territoriality stems less from ego-vulnerability than it does from the need to maintain and control information resources. The real threat isn't from rising end-user competence, it's from loss of data and data relationship integrity—again, an overpowering argument for a single software package.

Though there is (as yet) no single software system that satisfies all criteria, Knowledge Man (manufactured by Micro Data Base Systems Inc.) comes closest. Beyond the usual spreadsheet and data-management functions, it also includes a structured programming language as well as comprehensive security features (write/write access codes, passwords, automatic data encryptions). Furthermore, end-users can arrive at simple solutions almost immediately and turn to MIS/dp only for enhanced or more sophisticated solutions. This allows users not only to bootstrap themselves as far as they are willing or capable of going, but also to rely on MIS/dp expertise in the traditional way.

Solving the end-user dilemma is a lot simpler than many realize. Encouraging all end users (and where appropriate, dp, too) to use a single integrated software package and providing online access to a central database will let the problem practically solve itself.

Richard C. Bailey

Product Support Manager Micro Data Base Systems Inc.
Lafayette, IN

Address letters to the editor to Computer Decisions, 10
Mulholland Dr., Hasbrouck Heights, NJ 07604.

COMPUTER DECISIONS

T-BAR ANNOUNCES: **BIG NEWS. AND BIGGER NEWS.**

THE BIG NEWS.

The big news is that our new CSM 3200 Series high performance computer matrix switches provide the greatest capacity available. Anywhere. And at the least cost.

THE BIGGER NEWS.

This is the remarkable part. All that capacity comes in a smaller package. In fact, the smallest available, a compact 27" wide by 29" deep.

Our 3200 Series is designed around solid-state crosspoint switching modules that not only permit higher density packaging, but the fastest possible data through-path as well. The result is maximum capability with the minimum footprint.

AND, MORE NEWS.

Both CSM 3200 Series models, the 3232 and its economical partner, the 3202, feature our exclusive "MISER" power saver circuitry. Which significantly reduces your operating expense.

AND, STILL MORE NEWS.

The CSM 3200 Series is designed with tomorrow in mind. Because we know that your environment will change. So they're available in a variety of matrix size configurations. To expand as your environment expands. To change as your needs change.

THIS PART PROBABLY ISN'T NEWS.

The CSM 3200 Series is made by T-Bar. The same company that's been creating innovative application-oriented system solutions for more than a quarter century. T-Bar innovation. Helping you to take control of tomorrow. To learn more, call us at (203) 834-8300. Or write us at 141 Danbury Road, Box T, Wilton, CT 06897-0730.

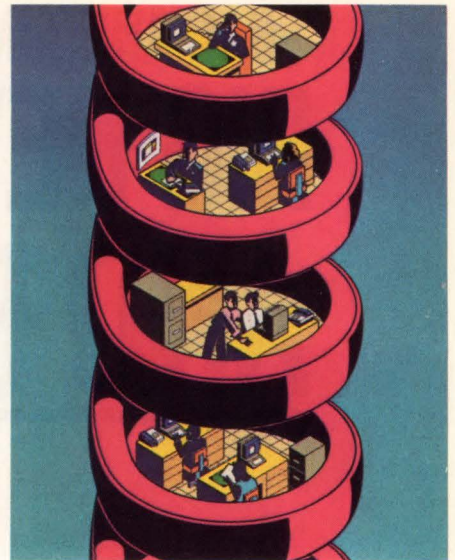
Tbar INCORPORATED[®]
Taking Control of Tomorrow



Voice Management



Data Management



Networking

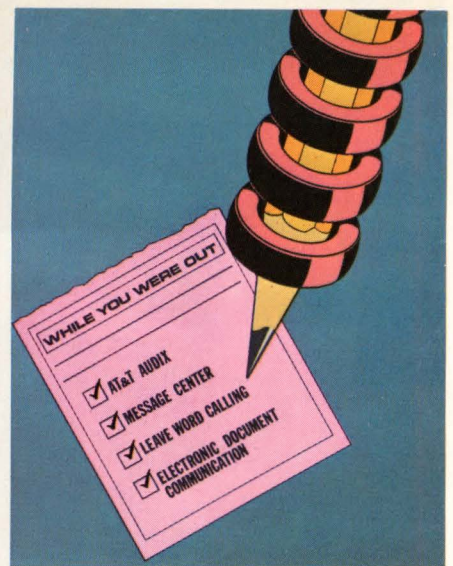
**WHAT THE
MOST POWERFUL,
MOST FLEXIBLE
COMMUNICATIONS
SYSTEMS IN THE
WORLD CAN DO
FOR YOU.**



System Management



Office Management



Unified Messaging

**ONLY AT&T SYSTEM 85 AND
AT&T SYSTEM 75 FULLY
INTEGRATE SO MANY VITAL
MANAGEMENT FUNCTIONS.**

Decisions, decisions, decisions. It wasn't too long ago that if you wanted the most sophisticated office communications equipment in the world, you'd get a telephone.

Now it's a whole new ball game. You've got to have more than a telephone. You've got to have an entire communications and information system. You've got to choose from among a number of vendors and justify a substantial capital investment. You've got only one chance to make the right decision. And you've got to be right.

Relax. The decision is easy. System 85 and System 75 from AT&T Information Systems offer you more power, flexibility and control than any other system in the world. Because they can grow and change as technology advances, you can be sure your investment is protected. And because they're from AT&T, you know they meet the highest standards of manufacturing quality and reliability.

Here are just a few ways they can help your office operate more efficiently and effectively.

Voice Management Our experience in voice communications speaks for

itself. There are over 150 calling features to choose from, so you can custom-tailor a system that meets the particular needs of your business.

Data Management This ties the whole system together. Our Distributed Communications Protocol integrates voice and data transmissions, resulting in more productive use of your equipment and easy future expansion.

Networking Different businesses need different networks. Our Distributed Communications System and Electronic Tandem Network let you link all your locations, either across the street or across the country.

System Management Adaptability is the key here. You'll have a hands-on ability to monitor and change the entire system day by day, to respond to your changing needs.

Office Management This streamlines your everyday office procedures into one easy-to-use system. By integrating Electronic Document Communication, Message Center, and Directory, you can create, store and send information easily and more productively.

Unified Messaging This complete, easy-to-use service is the answer to unanswered calls. It completely integrates all your messaging services, including Message Center Coverage, Leave Word Calling, and

AUDIX, our powerful voice mail service.

100 YEARS OF EXPERIENCE

There's another aspect of our system which you can look at as something of an insurance policy. It's called Information Systems Architecture. It is this framework that ensures that anything new we develop for your system will fit right in. System 85 and System 75 are designed according to its guidelines, as our future products will be. That's protection.

We've been the undisputed leader in communications for over 100 years, and we plan to keep it that way. Today, more than 4000 systems designers and others formerly at AT&T Bell Laboratories are working exclusively to develop new business products at Information Systems Laboratories. And they're supported by the largest sales and service staff in the industry to help you along every step of the way.

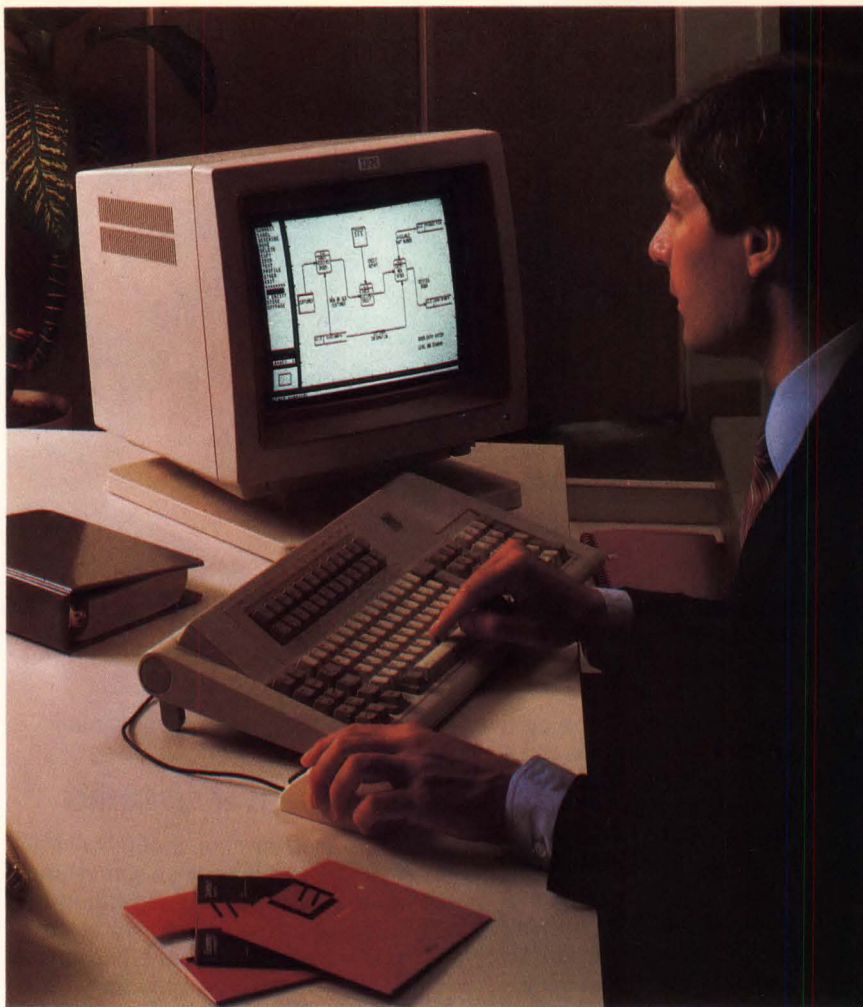
There are two ways you can distinguish yourself in the business world—either get a little gray at the temples worrying about it, or choose AT&T Information Systems.

To find out more about System 85 and System 75, call AT&T Information Systems at 1-800-247-1212, Ext. 187.

WHEN YOU'VE GOT TO BE RIGHT.



AT&T
Information Systems



The future of systems analysis.

Now! Computer Aided Design (CAD) has finally come to software engineering.

With *Excelerator*, you can improve the effectiveness of your systems analysts and software designers by providing a tool that automates the job of developing systems specifications. *Excelerator* provides facilities for creating and validating data flow diagrams, data model diagrams, structure charts, report mockups, and screen mockups. The extended data dictionary stores all the information about your specification, including record and file layouts, data elements, and relationships.

Now, you can cross-check all aspects of the system specification for completeness and accuracy. An integrated report writer and document preparation facility allow analysts to generate mini-specs for project reviews or the complete specification ready to deliver to clients.

Your specification is more complete and consistent than using manual methods—and finished in a fraction of the time.

Excelerator is the most complete workbench for the systems analyst available on the IBM PC-XT, 3270-PC, and PC-AT.

Call or write for more information.



Excelerator™

Index Technology Corporation Five Cambridge Center Cambridge, MA 02142 617 491-7380

West 18662 MacArthur Boulevard Suite 200 Irvine, CA 92715 714 955-1160

Southeast 7927 Jones Branch Drive Suite 400 McLean, VA 22102 703 442-8202

Midwest Citicorp Plaza 8410 West Bryn Mawr Avenue Suite 400 Chicago, IL 60631 312 380-1226

Southwest 12750 Merit Drive Suite 300, LB-20 Dallas, TX 75251 214 392-9930

Now available through your local IBM branch office

Intech

CIRCLE 7

COMPUTER DECISIONS

Headquarters Office

10 Mulholland Dr., Hasbrouck Hts., NJ 07604,
(201) 393-6000

Publisher/Vice President

Don Huber

Editor

Mel Mandell

Managing Editor

John Rymer

Senior Editor

David Whieldon

Software Editor

David Kull

Assignments Editor

Joseph Hillhouse

Art Director

Bonnie Meyer

Microsystems Editor

Susan Foster Bryant

Western Editor

Martin Lasden

(408) 736-6667

New England Editor

Mary Miles

(617) 746-4441

Office Automation Editor

Jennifer E. Beaver

(213) 548-7877

Southwestern Editor

Jordan Gold

(817) 292-8334

Washington Editor

J. B. Miles

(202) 488-8297

Data-Comm Editor

John Seaman

News Editor

Joseph Braue

Associate Editors

David Roman, Gary Stix

Industry Editor

Lee Keough

Regional News Editors

Michael Dobberstein

(408) 736-6667

Anita Micossi

(617) 890-8064

Production Editors

Bonnie DeBonis, Barbara Francett,

Robert Moran

Associate Art Director

Denise Barbieri

Photo Editor

Laurence L. Levin

New Products Editor

Theresa Conlon

Staff Writer

Patricia McShane

Copy Editors

Donna Jackel, Robbin Juris,

Dennis Mendyk

Researcher

Mary Jander

Editorial Support Staff

Virginia M. Johnson, Supervisor

Kathleen Ryan

Joanne Wendelken

Staff Artists

Laura Conca, Vincent J. Gallo



A NUMERICAL CONCEPT NO OTHER MONITOR CAN COMPREHEND.

As sophisticated as they are, you'd think monitor companies could solve a simple problem: keeping customers happy.

Fortunately, Amdek can. With the longest warranty in the industry. Namely, two years on all parts and labor. And three years on the CRT.

Even simpler, our warranty applies to every monitor we make, from our new Color Series to our amazingly popular Video Series.

And Amdek's own trained technicians make repairs quick and professional.

So when you're shopping for a monitor, look at the quality Amdek guarantees you, years after you leave the store.

According to our figures, it really adds up.

AMDEK[®] MONITORS

Amdek Corp., 2201 Lively Blvd., Elk Grove Village, IL 60007, 312/595-6890, Telex 280803



GETTING THROUGH TO THE TOP

Responsiveness is no doubt high on your list of the desirable characteristics of a supplier of data-processing equipment. When hardware or software fails to perform as promised, or a vendor's service falls below par, you need a fast fix. If your vendor's local representative can't quickly come up with a solution to your problem, it would be a consolation to know that it's possible to seek redress at a higher authority at the vendor.

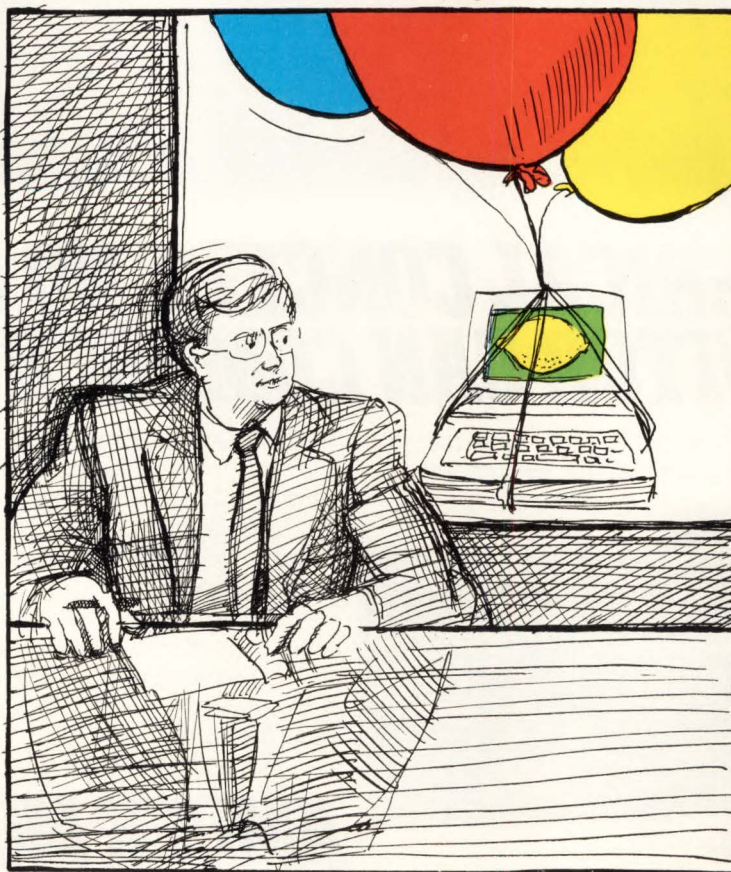
That's why I was so heartened to read, in the February 27th issue of *The Wall Street Journal*, that there are chief executive officers who keep in touch with their customers and the problems they have with products and services. Of the half dozen or so CEOs mentioned in the article, two head major computer corporations. John Sculley, president and CEO of Apple Computer Inc. in Cupertino, CA, listens to customers' complaints on Apple's toll-free "800" lines. He insists that other executives at Apple do the same. James G. Treybig of Tandem Computers Inc., also in Cupertino, CA, regularly scans his terminal for the complaints and suggestions that Tandem receives.

The article reminded me that it has long been the practice at IBM for the CEO and other top executives to frequently contact their customers—presumably the biggest ones—to find out how IBM and its products are performing. Not too surprisingly, IBM has a hard-to-match record for customer support and service.

How accessible are the top managers of the MIS/dp vendors your organization does business with? If a product or

service is less than satisfactory, can you reach to the very top, if necessary, for satisfaction? I suspect that you are more likely to get results if the primary business of your vendor is MIS/dp equipment. In contrast, you are less likely to obtain redress if the vendor is part of a conglomerate whose primary business is not computer-related. For example, if office-automation products were the primary business of Exxon Corp., the former owner of Exxon Office Systems, the latter might be faring much better.

This is not to suggest that you should only do business with vendors whose primary business is data-processing equipment. In fact, in the "News & Comment" section of a recent issue of *Computer Decisions*, an article on the effectiveness of the hot lines of vendors whose primary business is micro software pointed out that their customers think the hot lines aren't so hot. Fortunately, most vendors are responsive to their customers' needs. But, if your vendor's initial response to your problems is unsatisfactory, remember where the buck really stops, and that using your clout as a customer can often result in a "top-down" solution. □



All we want is to get our foot in your door.

See an EXECUCOM account executive about our mainframe Decision Support System and get your own desktop version—FREE.

How can you lose? Discover how your organization can dramatically increase productivity with IFPS®, the world's leading Decision Support System, from EXECUCOM—the leading DSS software company. In return, receive our PC version*. IFPS is the essential tool for strategic planning... perfect for cash flow analysis, budget forecasting and reporting, data consolidation and market simulation. Goal seeking, "What If?", optimization techniques and risk analysis features guide and support crucial business decisions.

IFPS can be implemented with a minimum of effort and is supported by on-staff specialists and a toll-free hotline. In fact, it's installed and running in hundreds of major companies across America and around the world.

Read what the experts have to say:

"We've found IFPS to be an extremely flexible tool for use in problem-solving applications. It's also excellent for any kind of long-range planning and decision making. We find that IFPS's response to the tough problems is especially rewarding."

Thomas Daily, Director of Planning Systems
Libbey-Owens Ford Company

There's much more to IFPS. See for yourself. Our account executive will give you a no obligation DSS "checkup" and you'll get your own desktop system... FREE. IFPS. From EXECUCOM. Continuing a decade of excellence in Decision Support. For information on how your organization can qualify, call Phyllis Shockey at 1-800-531-5038 (in Texas 512/346-4980).

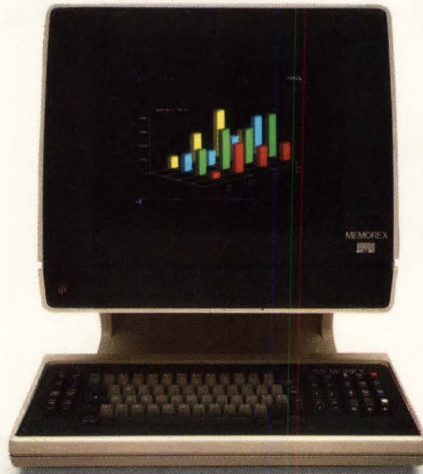
EXECUCOM
3410 Far West Boulevard
Austin, Texas 78731

*Requires IBM PC, XT, AT or compatible, 512K MS-DOS.



The reasons 3270 us can be summed

More.



2079

More than meets the eye: seven crisp, vivid colors for more effective presentations.

More optional features such as APL/Text, cursor choices, graphics.

More features and benefits in the 3270 world.



2078

More sight for sore eyes: your choice of high-resolution amber or green phosphor CRTs.

More productivity from ergonomic keyboards and tiltable screens.

More efficient use of energy.



2178

More flexibility with a modular design, plus tilt and swivel.

More for your money: 3270 functionality at a lower price.

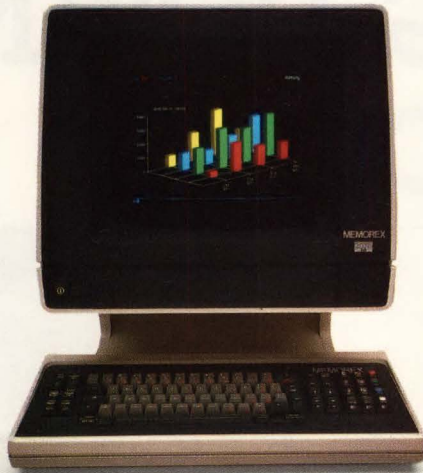
More support and service from a worldwide organization that's as good as its word.

ers choose Memorex up in two words: And less.

Less time finding key points—color attracts attention.

Less reason to look anywhere else.

Less to worry about when you need full 3270 compatibility.



2079

Less glare, less eye fatigue.

Less for fingers to trip over and shoulders to hunch over.

Less to pay for power bills—up to 58% less.



2078

Less desk or work space needed.

Less trouble stretching your budget.

Less for you to worry about. Period.



2178

So plug compatibility, competitive prices and uncompromising quality make Memorex the alternative in the 3270 world?

Definitely. More and less.

Call 800-854-5484 today. Or write: Memorex Communications Group, MS 14-39, San Tomas at Central Expressway, Santa Clara, CA 95052. And find out for yourself.

Compatibility.

When it matters, make it Memorex.™

MEMOREX
A Burroughs Company

Edited by Joseph Braue, News Editor

KEEPING DOWNTIME DOWN

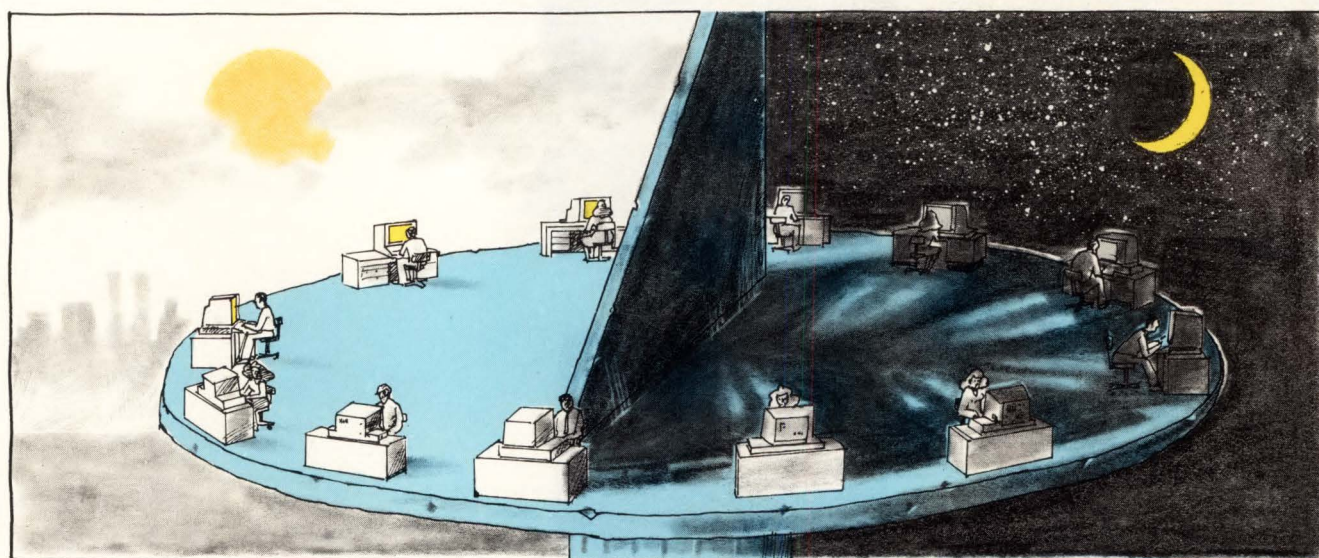


Illustration by Dan Culhane

In 1975, the computers at the U.S. Census Bureau in Washington operated for only about 10 to 12 hours between crashes. Today, the mean time between hardware breakdowns is more than 19 days, and software crashes occur only about once a month, according to Brian Benton, associate director of the bureau.

As organizations come to rely ever more heavily on computers, "acceptable downtime" is becoming no downtime. "Computers have become like telephones," says Roger Tydberg, performance planner for General Mills Inc.'s consumer-foods division in Minneapolis. "Employees expect them to be there and won't put up with any lapses."

In a sampling of organizations across the country, *Computer Decisions* found most downtime rates for

mainframes to be under 2 percent. For more positive thinkers, this means' uptime is better than 98 percent.

Of course, getting accurate and comparable statistics on downtime is complicated by the number of variables involved in the operation of a computer system. Such variables include the age and configuration of

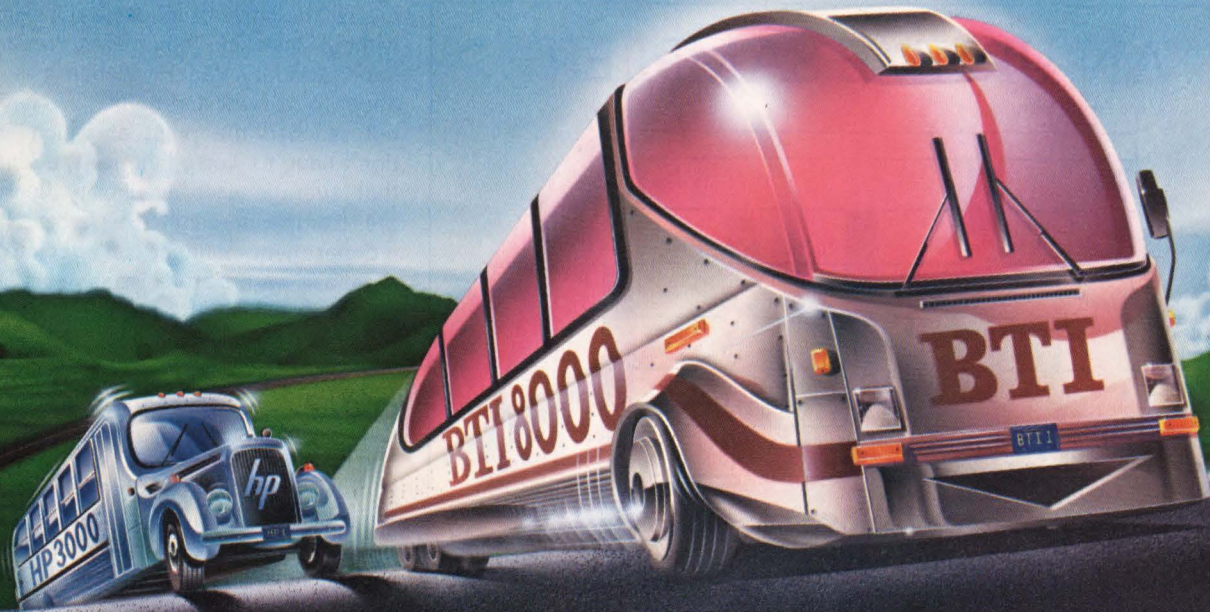
hardware, the varieties of applications used, the volume of use, the ratio of online to batch processing, the quantity and quality of routine maintenance, the physical conditions in the dp shop, and the reliability of the communication lines that tie a system together. Also, some downtime figures reflect component-by-component tracking, while others represent a total-system-performance level.

The 98 percent uptime figure refers to the amount of time a system's hardware is functioning. But for users, a more valid measurement of uptime is user availability. "A central-processing unit almost never crashes," says Bob Browning, assistant director of operations at Washington University's computing facility in St. Louis. "It's more relevant to define downtime from the user's point of view. If an application is

INSIDE NEWS

- Micro users cause MIS/dp to lose control 22
- DEC strengthens ties between its micros and VAX minis . . 24
- IBM unveils fiberoptic link for data centers 32

The BTI 8000 outperforms the HP 3000 3 to 1



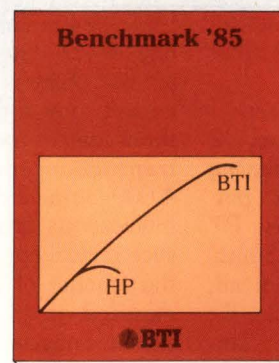
That's right! Benchmark tests prove that the latest version of the BTI 8000 can support more than three times as many online interactive COBOL users as HP's top-of-the-line Model 3000/68.

We programmed a "driver" computer system to simulate from 10 to 250 individual users performing representative data processing tasks. This provided us with a controlled and repeatable test of each benchmarked system, operating in a real world multi-user environment. Overall, we timed more than one million responses.

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

Test results were examined by the international consulting and accounting firm of KMG Main Hurdman. Their detailed report is yours for the asking.

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



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

Contact us today for more information and for your copy of "Benchmark '85" including the KMG Main Hurdman report.

BTI 8000 32-bit Multiprocessor System

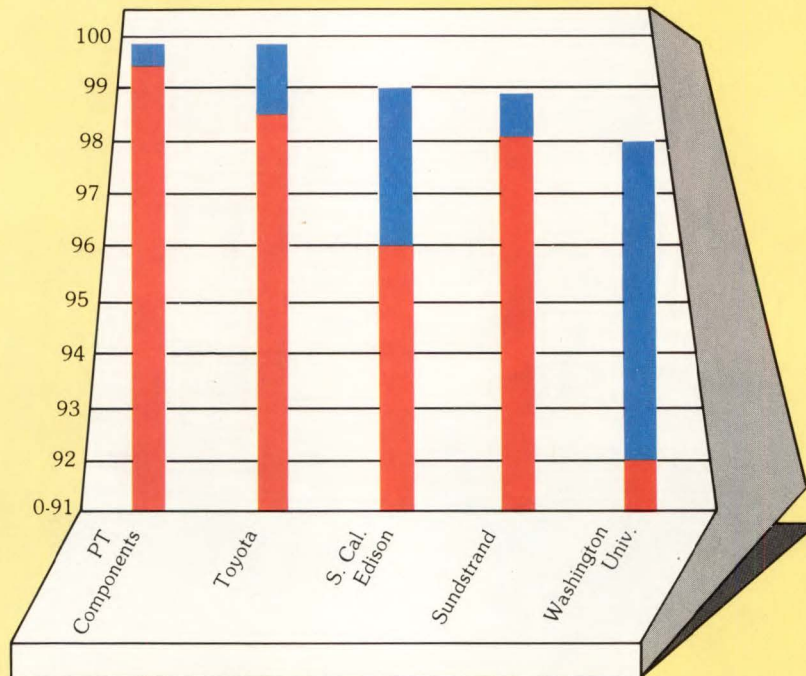
BTI Computer Systems, 870 West Maude Ave., Sunnyvale, California 94086 (408) 733-1122
In Europe: BTI Computer Systems, (UK) LTD., Birmingham B13 8NG, England (021) 449-8000

• & BTI are registered trademarks of BTI Computer Systems.

• is a registered trademark of Hewlett-Packard Co.

AN UPTIME SAMPLER

User Availability*



Red Minimum user-availability rates.

Blue Maximum amount of time (in percentages) during which systems could be accessed by users.

*Statistics represent the most recent yearly averages provided by a random selection of the five user organizations listed above.

not available for use by a given individual, the system is down as far as that person is concerned."

The MIS/dp shops surveyed report user-availability rates of between 92 and 99.9 percent. The accompanying chart contains user-availability percentages for five corporations: PT Components Inc., Indianapolis; Southern California Edison Co., Rosemead, CA; Sundstrand Corp., Rockville, IL; Toyota Motor Distributors Inc., Torrance, CA; and Washington University, St Louis.

Southern California Edison says it now posts user availability of 99 percent, up from 95 percent to 96 percent in 1980. Jack Van Paddenburg, manager of information services at the utility, says his department's three

IBM 3084 mainframes run 24 hours a day, seven days a week, and handle all the utility's business applications except power-grid operations. The three mainframes process 1.4 million transactions per day and service 4,000 terminals linked by 400 communications lines. They also handle such critical applications as measuring the amount of radiation workers are exposed to in Southern California Edison's nuclear plants. The utility has a full-time manager who tracks system failures and keeps statistics on uptime, as well as a troubleshooting department that fields 500 to 600 calls per day.

Although Southern California Edison has enjoyed some months of 100 percent computer availability and

has hit the limits of machine reliability without installing completely redundant facilities, Van Paddenburg isn't about to sit back and relax. "We have not reached the point at which we don't have to worry," he says, adding that average user availability fluctuates from 96 percent to 99 percent. "If a department manager can't get into a database or an administrative assistant can't collect the day's electronic mail because the communication lines are down, our 100 percent uptime rate loses its sparkle," Van Paddenburg says.

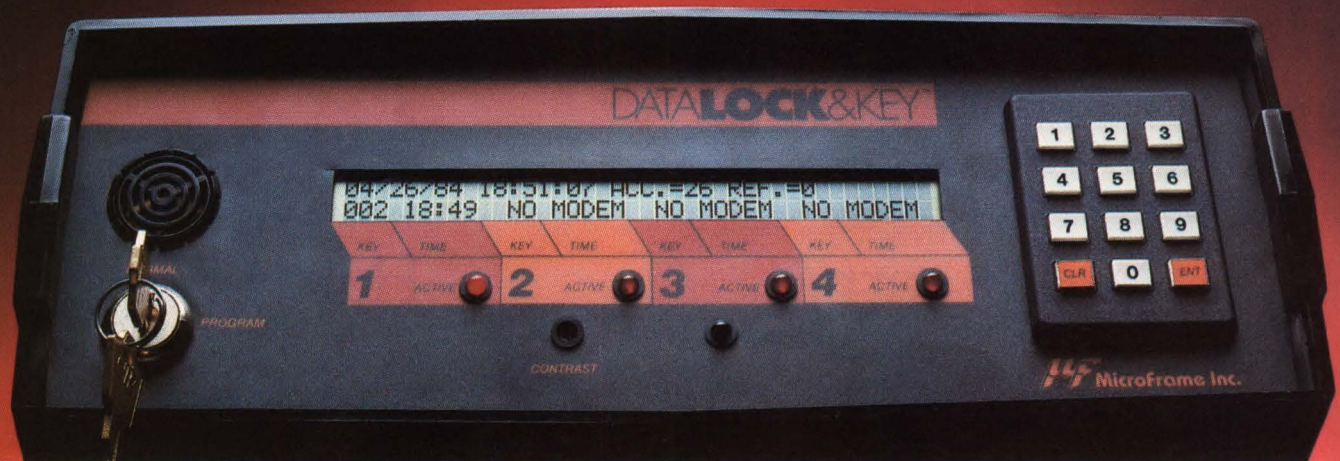
The computer facility at Washington University reports a user-availability rate of 92 percent to 98 percent, a rate that Bob Browning says is typical for university MIS/dp shops. Browning claims an aging IBM 4341 mainframe that supports an interactive system heavily used by students is responsible for most of the unscheduled downtime and holds down the average user-availability percentage. He adds that inexperienced users often cause system disruptions. "Students do a lot of crazy things that can hang up a system," Browning says.

Even small equipment problems can cause a breakdown in user availability. "A bad cable or peripheral can make a single application unavailable while the rest of the system keeps going," says Browning. Power outages, another cause of downtime, can have long-term as well as short-term consequences. "Brownouts or power failures are followed almost invariably by equipment failure within two weeks," Browning reports.

Joyce Amenta, deputy director of the U.S. Department of Transportation's computer center in Washington, points out that an operation going through a transition period or experiencing a high rate of growth is more likely to be unavailable to users. "If you're constantly adding new software and communications modules, for example, you're at risk," she says. "Every time you change something,

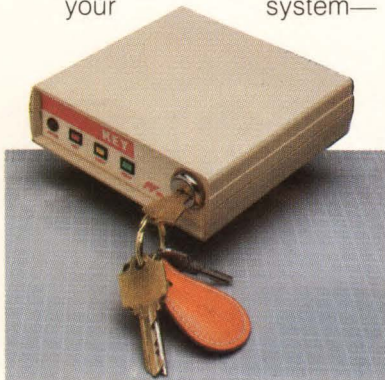
(Continued on page 22)

HACKER PROOF



Have **SECURE** dial access to **ANY** computer using **NO** passwords and **NO** dialback with **DATA LOCK & KEY™**

Simply connect a **DATA LOCK** (shown above) between your mainframe and your modems. Issue the portable **DATA KEYS** (shown below) to all authorized personnel. Only these members of your staff can access your system—



from any telephone—and they need no passwords! They simply dial in, and are connected.

NO PASSWORDS?

Only a **DATA KEY** can provide correct responses to the large random numbers sent by the **DATA LOCK**. Thus the **LOCK**

quickly identifies authorized users, and allows them to access the mainframe. Because the numbers are random, the dialogue between **LOCK** and **KEY** is different every time a user dials in.

Access is not dependent on passwords remembered, forgotten or passed along, so it is faster and more secure.

HACKERS, BEWARE.

DATA LOCK is ever-vigilant. Every unauthorized access attempt is immediately **detected, thwarted, displayed, printed and remembered**. Simultaneously, computer room personnel are alerted by a piercing alarm.

AUDITORS, REJOICE!

Just connect a printer to a **DATA LOCK** to obtain a comprehensive audit trail, which includes the following information:

- Date, time and details of all calls handled.
- Statistics of line usage.
- Unauthorized **DATA KEYS** (i.e. lost or stolen **KEYS**).

SPECIFICATIONS **DATA LOCK & KEY™**

works with all computers and modems with RS232 connections. The system is compatible with async, Bisync, SNA/SDLC and all other protocols. No adjustments are necessary for protocol, baud rate, modem type, etc. Protocols and mainframes of different types can be simultaneously supported by one **DATA LOCK**.

LINES SUPPORTED:

DATA LOCK—4
DATA KEY—1

DATA KEYS supported by

DATA LOCK: any number.

PRICE: **DATA LOCK**—\$4,000
DATA KEY—\$400



MicroFrame Inc.

205 Livingston Ave.
New Brunswick, NJ 08901
(201) 828-4499



Hard to carry



Hard to read



Hard to expand



Hard to beat

Feature for feature, it's hard to beat the COMPAQ® Portable and COMPAQ PLUS™. For one simple reason. While others make compromises, COMPAQ makes portable personal computers that can do everything a desktop can. And more.

Compared to the IBM® PC, for instance, COMPAQ Portables run *all* the same popular business programs, all the same printers, and can expand to more than 30 times the storage. *Plus* they have a handle.

Compared to briefcase models, COMPAQ offers more again. More memory. More storage. A standard keyboard. Standard diskette drives so you can use industry-standard programs—as they are, without modification. And a brilliant, high-resolution screen that displays text *and* graphics at one time. Not one you have to play peekaboo with.

Compared to the Mac, COMPAQ lets you add a second diskette drive or even a 10-megabyte fixed disk drive. Inside, not out. Not to mention that we speak the Mother Tongue of Business Computers and Mac doesn't.

With a rugged, full-function COMPAQ, you don't have to compromise capability, compatibility or readability for portability.

COMPAQ®

It simply works better.

For a free brochure or the location of your nearest Authorized COMPAQ Computer Dealer, call toll-free 1-800-231-0900 and ask for Operator 1.

NEWS & COMMENT



Toyota's Robert Best promises users a 98 percent availability rate.

(Continued from page 18)

your downtime goes up."

MIS/dp shops are often faced with the dilemma of having to guarantee user availability even though system downtime is inevitable. Robert Best, vice president of Toyota Motor Distributors, has promised 99.9 percent total-system uptime and 98 percent availability to remote-site users, including 700 dealerships nationwide. Without a high uptime rate, Toyota runs the risk of losing customers, he says.

Some businesses have even more to lose when their systems are down. A study coordinated by Jim Wetherbe at the University of Minnesota's (Minneapolis) MIS research center shows that

24 to 48 hours of downtime can ruin a financial institution. "Most banks have contingency plans for 30 hours of downtime," Wetherbe notes. Wells Fargo & Co., the San Francisco-based bank that survived the famous 1906 earthquake, is ready for the next big rumble. The bank has convinced the state of California to put financial institutions—the only private enterprises so designated—on the priority list for emergency aid during a major disaster, according to Joseph Koonin, manager of safety at Wells Fargo.

Large organizations that are particularly sensitive to system downtime can often convince vendors to guarantee an uptime percentage. The Gener-

al Services Administration, the accounting arm of the federal government, demands that vendors guarantee at least a 90 percent uptime rate for government systems. Much higher percentages are expected for critical applications, such as systems for national defense. Most vendors contacted by *Computer Decisions* refused to reveal what percentages of uptime they guarantee users. Computervision Corp., a vendor of CAD/CAM systems based in Bedford, MA, says it guarantees 97 percent uptime.

Generally, the larger the amount of equipment users purchase, the more likely a vendor will guarantee a certain percentage of uptime. Bill Doyle, assistant general counsel for the Colonial Penn Group Inc., a Philadelphia-based insurance carrier, was able to get a guarantee of 95 percent uptime when he negotiated a \$2 million maintenance contract with Honeywell Inc., Minneapolis. Yet Robert Bramson, who heads the computer-law group at Schnader, Harrison, Segal, and Lewis, a Philadelphia law firm, says Honeywell would not include an uptime guarantee in a \$500,000 maintenance contract he worked on. A Honeywell spokesperson confirms that in certain undisclosed circumstances the vendor will give an uptime guarantee. IBM, which has more than 70 percent of the corporate-mainframe market locked up, would not comment on the subject of uptime guarantees. —Anita Micossi

MICRO USERS TAKE THE DATA AND RUN

Although MIS/dp's responsibility for the flow and integrity of data is increasing, managers are losing control over what users do with information resources, says Hank Janson, director of information systems for International Data Corp. (IDC), Framingham, MA.

Janson, who made his comments at a day-long briefing held last month in Boston by IDC, blames MIS/dp man-

agement's dilemma on the spread of personal computers in large corporations. IDC projects that domestic shipments of business micros in 1985 will be 60 percent of the value of mainframe shipments; within three years, IDC says, the two values will be equal. The installed base of IBM Personal Computers now represents roughly three times the processing power (in-

structions processable per second) of Big Blue's installed 370 and 30XX mainframes. IDC also reports that corporate off-the-shelf software purchases increased by 30 percent during the last 18 months.

MIS/dp managers often have little or no control over the influx of personal computers into corporations, Janson claims. At least one third of 20,000

Both letter-quality and draft hard copy

Fastest document throughput in its class

Industry standard serial and parallel interfaces.

TI reliability

Compatibility with third-party and proprietary software

Both friction and tractor paper feed

Better, more versatile operator controls

Better, more durable easy-access font modules

The TI 855 microprinter. No other printer says better so many ways.

Feature for feature, no other microprinter can match the versatility, compatibility, reliability and productivity of the OMNI 800* Model 855 microprinter. Here's why.

Two Printers In One. With the TI 855 you get the speed of dot matrix draft copy. Plus the precise clarity of the most advanced matrix technology for letter-quality print. It's two printers in one — at one low price.

A Great Family Name. Texas Instruments is known for providing the world with the industry standard for printers — the TI 810. TI builds the same reliability into every 800 series microprinter. Both the 855 and the data processing Model 850 are part of the expanding TI line of high-performance, low-cost microprinters.

Hardware Compatible. The TI 855 microprinter is compatible with all major PC hardware. And it provides both serial RS232C subset and "Centronics-type" parallel as standard interfaces.

Software Compatible. The TI 855 uses industry standard escape sequences for compatibility with virtually all third-party software. And for those with proprietary software needs, a model is available with ANSI standard escape sequences.

Tough Font Modules For Quick Character Change. Three font modules can be inserted into the front of the printer at one time, and are accessed individually. Each contains both draft- and letter-quality character sets. They're easier to use, more reliable and more durable than traditional metal or plastic daisy wheels.

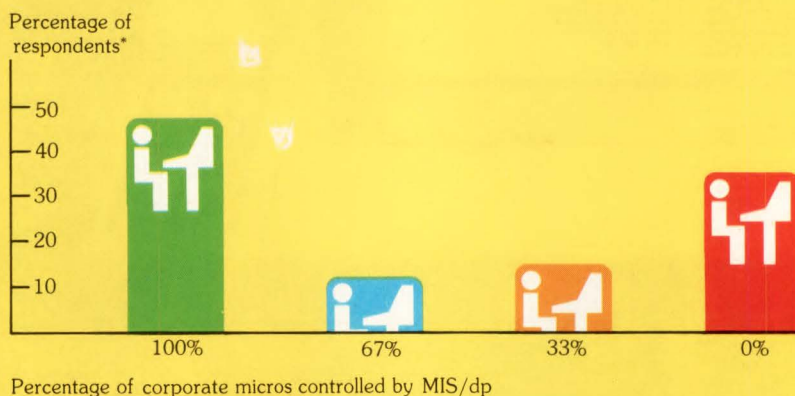
More Productivity Than Any Other Microprinter. The 855 offers both friction and tractor paper feed, to handle all types of word and data processing applications. A quick-change snap-in cartridge ribbon. Raster and mosaic graphics. And intelligent printing which maximizes document throughput — regardless of format.

Get the printer that makes for better information systems. For more information visit your nearest TI authorized dealer or write Texas Instruments Incorporated, P.O. Box 809063, Dept. DPF-0830C, Dallas, TX 75380-9063. Or call toll-free: 1-800-527-3500.

**TEXAS
INSTRUMENTS**

Creating useful products
and services for you.

DP CONTROL OF MICROS



*Between 200 and 300 MIS/dp managers responded.

Source: International Data Corp.

managers recently surveyed by IDC say they have no power to control the purchase and use of micros in their organizations; another 25 percent say they have only partial control, Janson reports.

Janson says a recent lawsuit brought by Lotus Development Corp. (Cambridge, MA) against Decatur, IL-based Mueller Co. Inc. highlights the double bind of responsibility without control. In the suit, Mueller's manager of data processing was named as a culpable party in the illegal copying and distributing of Lotus micro software.

At the same time that MIS/dp managers are losing control of users, Janson argues, their responsibility for all corporate data resources, security, communication links, data integrity, and the dispersal of a combined \$111 billion in spending on information resources is increasing. New titles—such as chief information officer—and the elevation of MIS/dp directors to higher management positions signal the rising expectations of MIS/dp performance, Janson says.

The biggest challenge to MIS/dp over the next half decade is in using the communications arena to regain lost control over data, Janson believes. IDC expects communications expenditures

to grow twice as fast as hardware expenditures in the near future. "MIS/dp can use communications to enforce

standardization," says Janson. "Lay down the law and say, 'If you can't talk to me, you can't have my data.'"

MIS/dp management would also do well to cultivate communications-systems analysts, Janson argues. Such analysts may be hard to find now, Janson says, but they will become ever more critical to operations. Janson further suggests that MIS/dp managers pump up their systems-programming departments to keep pace with—and control over—off-the-shelf micro-software purchases.

Another way for MIS/dp directors to reassert authority is to establish in-house stores to supply and support users and information centers to help users develop their own applications, Janson says. He claims that such services help MIS/dp ensure hardware compatibility and steer users to corporate-sanctioned software.

—Anita Micossi

DEC PUSHES USE OF ITS MICROS WITH THE VAX

Digital Equipment Corp., Maynard, MA, has given its VAX-mini-computer customers more reasons to buy DEC personal computers by providing a consistent menu interface between DEC micros and VAXs running DEC's All-in-One office software.

Two of the new packages, DECmate Office Workstation 2.0 and Pro/Office Workstation 4, are new releases of communications software that give DECmate IIs and IIIs and DEC Professional 350s and 380s the same menu interface as a VAX-terminal user would have. Of course, each micro has to be hooked to a VAX host to take advantage of these capabilities.

DEC has also announced a new communications package, the Rainbow Office Workstation, which allows Rainbow users to download VMS-operating-system files. It also integrates the new All-in-One interface. A new package, DECnet-Rainbow, allows Rainbows to

be connected to DEC's DECnet networking scheme. Previously, Rainbow users only had the limited access of a terminal to VAX hosts. Now users can perform more complex tasks, such as transferring files back and forth between the Rainbow and the VAX host. Prices for the new software range from \$295 to \$995.

In addition, DEC recently announced the Rainbow 190, a Rainbow 100 personal computer with more standard memory (from 256 Kbytes to 640 Kbytes), a 10-Mbyte hard disk, WPS-Plus/Rainbow software, and a special keyboard that allows Rainbow users to use WPS-Plus, DEC's mainline word-processing package. Like Rainbow 100, Rainbow 190 runs off-the-shelf MS-DOS applications, with the exception of IBM versions.

News of the upgraded Rainbow buries rumors—fueled by reports of a halt

(Continued on page 28)

Test Your Microcomputer IQ*

1. Name a totally integrated software package that was rated #1 by *Software Digest*. _____
2. Where can you buy an IBM PC XT or AT, AND have it installed, AND get on-site warranty for it? _____
3. Who will educate IC personnel or end-users at their site or yours? _____
4. What provides virtually any type of PC communications capability — from simple TTY to 3278/79 emulation? _____
5. What provides a micro software facility that allows you to customize a system to your specific requirements? _____
6. Who are the premier micro consultants to the *Fortune* 1350 companies? _____
7. Who has made the word hot-line obsolete, by staffing a full-service support center with computer professionals? _____
8. What is the easiest way for an IC manager to satisfy the many end-user needs in the organization? _____
9. What company's evolutionary approach to software and service (also demonstrated by NOMAD, now NOMAD2, the premier 4GL/DBMS) ensures that they'll be a major force in the micro marketplace for years to come? _____
10. Name the companies that can provide all of the above? _____

*(Turn Page Upside Down for Answers)

1. DunsPlus Software 2. From DunsPlus 3. The DunsPlus Education Staff
4. DunsPlus's Communications Utilities 5. The DunsPlus Tool Kit 6. DunsPlus's Professional Consulting Staff 7. The DunsPlus Support Center 8. Call DunsPlus at 800-DNB-PLUS 9. Dun & Bradstreet, the parent company of DunsPlus 10. DunsPlus

If you answered all of the above correctly, you've already solved most of the problems facing you. If not, give us a call at 800-DNB-PLUS, or write us at 187 Danbury Road, Wilton, Connecticut 06897.

DunsPlus:
An Innovation In
End-User Computing
From Dun & Bradstreet

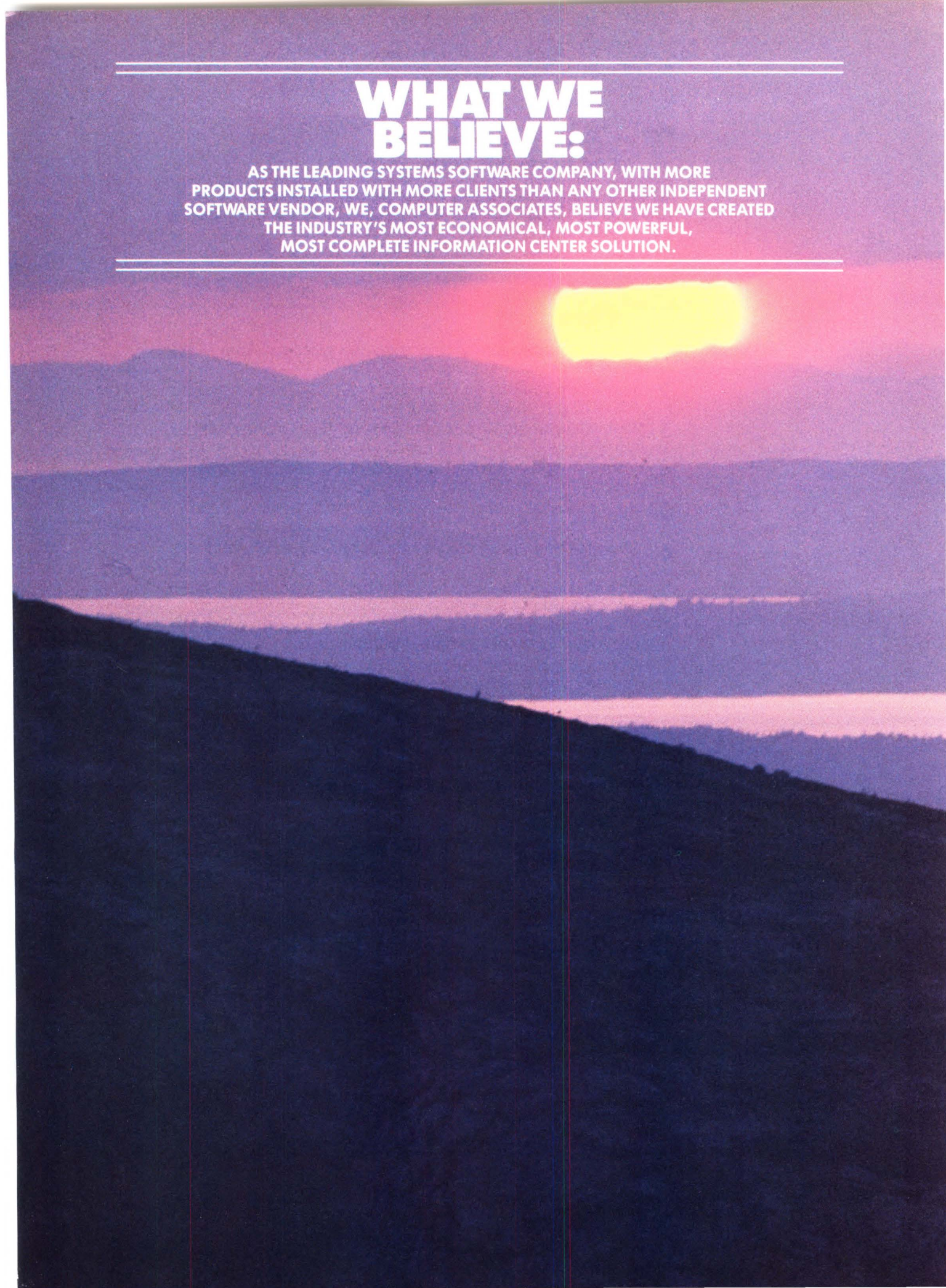
DunsPlus

DB a company of
The Dun & Bradstreet Corporation

IBM is a registered trademark of International Business Machines Corporation. DunsPlus is a trademark of DunsPlus, a company of The Dun & Bradstreet Corporation. NOMAD2 is a trademark of D&B Computing Services.

WHAT WE BELIEVE:

AS THE LEADING SYSTEMS SOFTWARE COMPANY, WITH MORE
PRODUCTS INSTALLED WITH MORE CLIENTS THAN ANY OTHER INDEPENDENT
SOFTWARE VENDOR, WE, COMPUTER ASSOCIATES, BELIEVE WE HAVE CREATED
THE INDUSTRY'S MOST ECONOMICAL, MOST POWERFUL,
MOST COMPLETE INFORMATION CENTER SOLUTION.



CA-UNIVERSE™ AND CA-EXECUTIVE™ LINKING THE NEWEST TECHNOLOGIES IS THE SIMPLE, POWERFUL, TOTAL SOLUTION THAT CONVERTS YOUR DATA CENTER INTO AN INFORMATION CENTER.

CA-UNIVERSE and CA-EXECUTIVE represent the latest advances in their fields of information processing. CA-UNIVERSE is a true relational DBMS, much more comprehensive than either SQL or DB II, that gives programmers the application independence they've needed. CA-EXECUTIVE is the industry's most versatile and powerfully integrated micro workstation software with a secure, intelligent link to the mainframe. Both give end users the easy access and multiple facilities they've always wanted.

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

This integrated total approach is by far the most cost-effective Information Center solution—at less than half the cost of doing it with fragmented “building block” type products. And it's better, too. For example, programmers can develop programs at both the PC and mainframe levels. And instead of a multitude of different query, reporting, data manipulation, and data base design languages, there is a single, unified English language common to both products. The entire system is portable across IBM DOS, MVS and VM environments. Leave the past behind. Start your Information Center by calling us at 800-645-3003, or (in NY) 516-333-6700 and ask for Dana Williams.

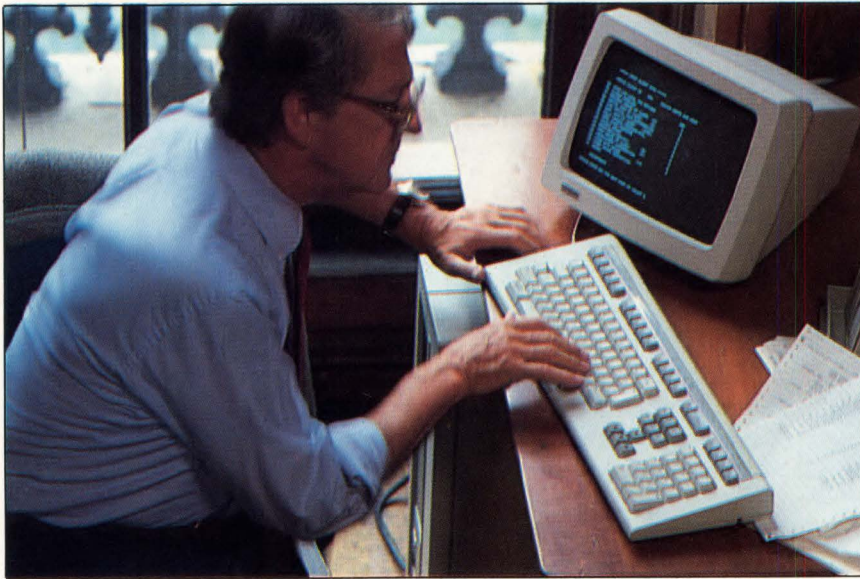


COMPUTER ASSOCIATES

Software Leadership Through Excellence

© 1985 Computer Associates International, Inc.
125 Jericho Turnpike, Jericho, NY 11753

NEWS & COMMENT



The Rainbow 190: A new hard disk, more memory, but still IBM incompatible.

(Continued from page 24)

in Rainbow 100 production at DEC's main assembly plant in Westfield, MA—that DEC is abandoning the machine. DEC spokesman Joe Codispoti explains that the upgraded Rainbow

will be assembled at Westfield, with parts manufactured at other DEC sites.

The Rainbow 190 will be available in July for between \$6,495 (single purchase) and \$4,990 (purchase of 100)

each. Kits to upgrade Rainbow 100 to Rainbow 190 functionality will also be available in July. DEC says it will continue to sell and support the Rainbow 100. The purchase price of the Rainbow 190 includes VAX menu-interface software and the WPS-Plus program.

"Stand-alone personal computing is a thing of the past," says Henry Ancona, group manager of office and information systems. DEC's office-automation strategy is to create and tie together a family of desk-top computers that address the needs of a range of users, from the casual collector of electronic mail to the engineer.

Although Ancona sees the elimination of stand-alone micros for business use, the fact is that almost 80 percent of corporate micros were not connected to hosts or networks in 1984, according to Future Computing, a Richardson, TX-based market-research outfit. Future Computing predicts that in 1985, just over 75 percent of corporate personal computers will be stand-alone devices. □

SMALLER MICRO MAKERS CLAIM STRENGTH

Despite predictions that dire times are in store for smaller makers of personal computers, several of those vendors say their companies remain strong and competitive.

Future Computing Inc., the Dallas-based market-research group, predicts a relatively stable market until 1990. But George F. Colony, president of Forrester Research Inc., Cambridge, MA, predicts the micro market will become so rugged this year that "a number of vendors will burn in the aftermath." Colony named Eagle Computer Inc. (Garden Grove, CA), Columbia Data Products Inc. (Columbia, MD), and Corona Data Systems Inc. (Thousand Oaks, CA) as potential dropouts.

The prediction is hogwash, say the vendors. "We are very solidly entrenched with distribution channels,"

says Dan Carter, president of Corona. "We have new products that are in production and shipping today."

Sam Irwin, CEO at Columbia Data says, "The Columbia personal computer is still very well received, and we have some innovative products that will be brought out before the end of the year."

Frank Wiekell, director of communications at Eagle Computer, says it will remain in the personal-computer business, although 1984 was a difficult year for the company. "There is a place in the market for the smaller companies with attractive products at attractive prices," says Wiekell.

Colony believes the shakeout is underway right now and will continue through the first and second quarters of 1986. The shakeout, according to Colony, is in

part a reaction to IBM's growing dominance. "IBM's hegemony has forced major players like Digital Equipment Corp. [Maynard, MA] to retrench and pushed smaller vendors to the brink," he says.

According to a Forrester Research report, the growth of personal computer sales is expected to decline this year. Colony says this slowing in demand for personal computers is contributing to the shakeout.

Although the office personal-computer market is very competitive, there is still room in the top tier for new entrants with ample capital, says a report by Future Computing, *Office Personal Computer Systems Manufacturers: Analyses and Profiles*. Bill Ablondi, vice president of Future Computing, says a shakeout is coming, but it is not immi-

ARE IBM'S NETWORK DIFFICULTIES INTERRUPTING YOUR REGULAR PROGRAMS?

There's a lot of talk about local area networking at IBM. Unfortunately, that's all there is.

Because IBM doesn't have local area networking yet. And who knows when they will.

The question is, why wait for IBM to catch up with technology that Wang has today?

WANG OPENS COMMUNICATION CHANNELS WITH LOCAL AREA NETWORKING.

When you use Wang

FEATURES	WANG VS 85	IBM SYSTEM 36
Migration without conversion up to 192 users	Yes	No
32-bit Architecture	Yes	No
Cache	Yes	No
Object Code Compatibility	VS 15, 25, 45, 65, 85, 100, 300	36 only
Virtual Memory Operating System	Yes	No
Removable Storage Options	Yes	No
Local Area Networks	Yes	No
Architected for OA/DP	Yes	No
Relational Data Base	Yes	No
Industry de facto Standard Word Processing	Yes	No

computers, including the members of our VS family, you can have local area networking today. We call it WangNet. And

we've already installed it in hundreds of businesses.

WangNet permits the concurrent exchange at up to 10 megabits per second of data, text, graphics, electronic mail, even video. It ties all your departments together, whether they're in one building or several.

And WangNet is just part of Wang Systems Networking, a complete communications framework for sharing informa-

tion among Wang systems and other systems. With a three-tiered design that's flexible enough to meet any company's communication needs.

JUST GIVE US ONE SHOT.

WangNet may be the beginning. But as the chart in this ad suggests, there are other reasons why you should let Wang handle your distributed data processing.

Including Wang's worldwide service and support program.

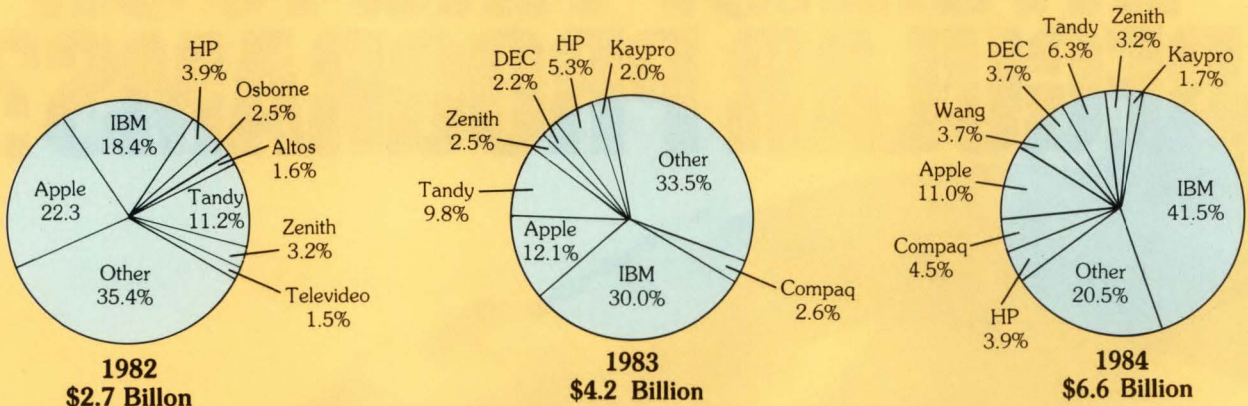
So call Wang at 1-800-225-9264 and give us a chance to prove ourselves in a benchmark test.

Or write to the Wang Business Executive Center, One Industrial Avenue, M/S 5413, Lowell, MA 01851.



WANG

IBM HOGS MICRO-VENDOR PIE



Copyright 1984 Future Computing Inc.

Domestic only

nent. He says the personal computer market will stabilize by the late 1980s or early 1990s. "You'll begin to see a shakeout of the weaker competitors and a stabilizing of the top tier of manufacturers. Many observers claim the shakeout is happening right now, but this isn't true. There are more competitors now than last year," says Ablondi.

The vendors in top positions this year will probably be the industry leaders through the end of the decade, according to the Future Computing report. But, adds the report, other suppliers have a chance at moving to the top as new entrants.

Regardless of when the shakeout happens, the reports indicate that IBM will dominate. Right now Big Blue controls about 40 percent of the office personal-computer market. Apple Computer Inc., Cupertino, CA, is in second place, but there is some disagreement about its future. Colony says Apple's position is far from secure because of its lack of penetration in the business-computing market. Laura Lundquist, office group analyst at Future Computing, disagrees. She says Apple has successfully positioned products in both the home and office markets, which will allow it to remain a strong leader in the industry.

Colony is also skeptical about the future of Tandy Corp., Ft. Worth, TX, in the personal-computer market. Tandy's focus on IBM compatibility is dangerous because IBM changes the rules regularly, he says. Lundquist disputes this. She says, "Tandy has remained third during the past few years, maintaining a stable share of the market. There's a good chance it will keep a po-

sition among the top five."

Office Personal Computer Systems Manufacturers: Analyses and Profiles is available from Future Computing for \$3,000. For more information, call (214) 437-2400. The report by Forrester is part of the *Professional Automation Report and Bulletin*, which costs \$800 a year. For more information, call (617) 497-7090. □

EBB & FLOW KODAK BUYS FLOPPIES

Eastman Kodak Co. (Rochester, NY), expanding its move into the floppy-disk market, has agreed to acquire Verbatim Corp., the Sunnyvale, CA, floppy-disk manufacturer, for approximately \$175 million.

A spokesperson for Kodak says the move will allow Kodak to concentrate on producing high-density magnetic disks and optical disks. Kodak has been making floppy disks on a small scale since last October.

According to industry estimates, Verbatim controls about 20 percent of the floppy-disk market in the United States. Verbatim reported a net income of \$15 million for fiscal 1984 and losses of about \$250,000 for the sec-

ond quarter of 1985. Kodak will retain the Verbatim trademark and continue to manufacture floppy disks in Sunnyvale, the spokesperson says.

Bridge Communications Inc., the Mountain View, CA-based manufacturer of Ethernet-based local-area network (LAN) products, has acquired Coherent Systems Inc. of Bedford, TX, a manufacturer of broadband radio-frequency modems. Terms of the agreement were not disclosed.

Coherent Systems, formed in 1982, will become Bridge's radio-frequency-products division. According to Bridge, the new division will remain headquartered in Texas. □

(News continued on page 32)

He's a good kid.
He means no harm.
He just accessed
your computer database.



security software cuts out any shenanigans with your company's data. By anybody. From phone-phreaking hackers to hard-nosed computer crooks.

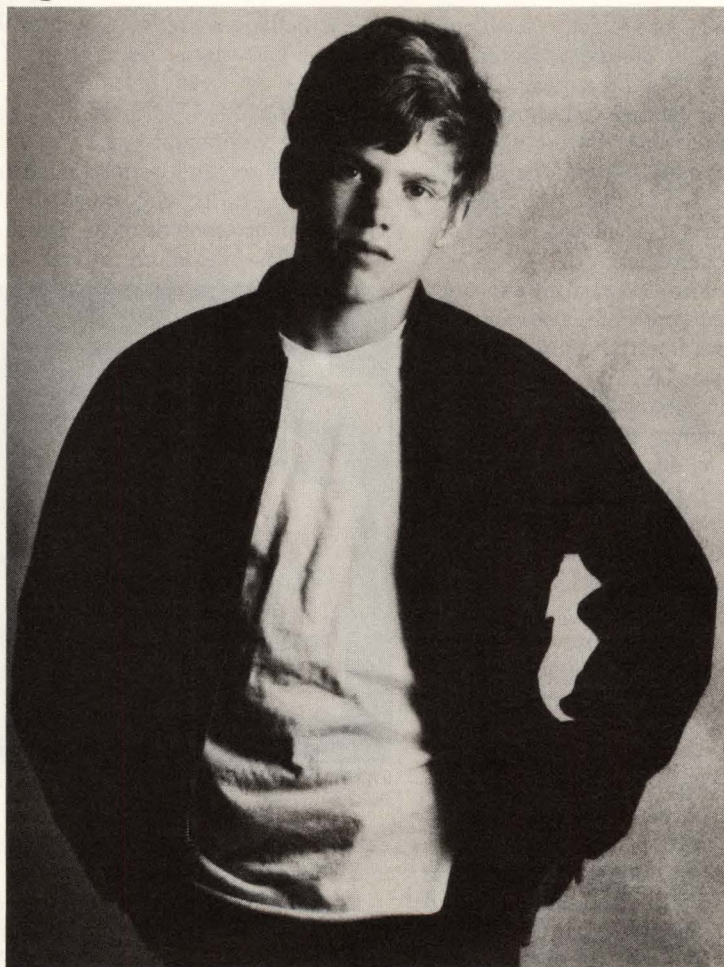
In fact, TOP SECRET access control software gives you the most comprehensive, long-term data protection available for MVS environments. Without the traumas.

TOP SECRET software utilizes the standard MVS security interfaces. So security implementation is easy, painless and practically undetectable to end-users.

With no disruption to normal work routines, TOP SECRET lets you secure critical resources immediately, define others, and then proceed in stages to full data protection. You control security at your own pace with TOP SECRET software's unique phased implementation.

Because TOP SECRET is so flexible, you don't ever have to worry about future compatibility as your systems grow and change. And TOP SECRET makes sure you can protect a full range of MVS software products right now.

Installation Time: less than half an hour, with no IPL and no modifications to the operating system because TOP SECRET uses standard MVS security interfaces. So, when MVS changes, you don't have to.



Administration: convenient, total security administration across all subsystems from any terminal. And with immediate results.

Efficiency: there's no down-time, no work disruptions and no on-going, costly maintenance.

It's no wonder that, in any product comparison, TOP SECRET security software comes out on top.

As an added bonus, our TOP SECRET Consulting Group is available to make doubly sure that you plan and implement TOP SECRET

security successfully. Our experienced consultants will work with you to design a complete data security program for your company's needs.

So, before some fun-loving kid does any long-distance damage to your valuable data, make a phone call of your own. Call 800-237-2057 (in Florida, (813) 263-5011) for your free 30-day TOP SECRET trial today.

cga
Software Products
Group

960 HOLMDEL ROAD, HOLMDEL, NEW JERSEY 07733

(News continued from page 30)

IBM EMBRACES DATA-CENTER FIBEROPTICS

IBM has, in effect, sanctioned fiberoptics in the data center. Big Blue's new 3044 Fiberoptic Channel Extender pumps data from hosts to peripherals faster and farther than Big Blue devices could before. The promise is of higher speed data transmissions between floors in a building or sections of an office campus.

What's more, a key IBM executive suggests that corporate customers can expect more fiberoptic announcements from Big Blue. "An investment in fiberoptic channel-extension networks today will continue to pay dividends in the future as strategic enhancements continue," says Carl J. Conti, president of IBM's Data Systems division.

Peter Balbus, director of strategic planning for Network Strategies Inc., a Burke, VA, consultancy, says IBM's move into fiberoptics opens the possibility of T-1 communications between IBM hosts and peripherals without modems and costly front-end processors. A T-1 line—with some sort of interface and buffer device—might be plugged into a 3044, allowing data to fly over long distances at 1.544 million bits per second (Mbps), instead of the maximum 56,000-bit-per-second speed currently available using telephone lines. IBM does not encourage users to entertain these expectations.

The combination of T-1 and the 3044 would eliminate much of the need for front-end processors and modems that are cluttering data centers today, says Balbus. The consultant predicts T-1 costs will eventually drop to make this method of data transmission more cost-effective.

Robert Gilbertson, president and CEO of Channelnet, maker of Syslink, a fiberoptic channel extender similar to the 3044, knows of no such interface between a fiberoptic channel extender and a T-1 line. IBM has a T-1 connection, but it requires a front-end processor and costly attachments, he says.

"It's something we're looking at for the future," Gilbertson said of a T-1 interface.

Using the 3044, MIS/dp managers can place peripherals such as high-speed printers and terminals farther away from hosts and maintain the same response time as more close-knit systems. The maximum distance data

can travel using the 3044 is between 4 and 5 kilometers, says IBM.



The IBM 3044 is IBM's first fiberoptic product for the data center.

can travel using the 3044 is between 4 and 5 kilometers, says IBM.

Both the 3044 and Syslink give corporations the benefits of fiberoptic cable. Heavy, bulky bus and tag cables that currently extend channels can be replaced by fiberoptic cables about one-tenth the size and weight for half the price. Moreover, these fiberoptic products will take some strain off front-end processors that are conducting communications to nearby and remote hosts and peripherals, notes David Passmore, a group manager for Network Strategies.

Channelnet, a Southport, CT, subsidiary of Data Switch, announced Syslink about a month before IBM announced the 3044. Unlike the 3044, which provides both host-to-host and host-to-peripheral channel connections, Syslink only provides host-to-host con-

nections. But Channelnet claims Syslink is less expensive (a 4-kilometer link between two hosts would cost about \$40,000 less than IBM's fiber solution) and transmits data faster (2.4 million bytes (Mbytes) per second to IBM's maximum 1.25 Mbytes per second) and farther (16,520 feet to 13,200 feet) than IBM's 3044.

Channelnet claims Syslink offers better diagnostics than the 3044. Also, rather than simply transmitting signals at high speeds, Syslink alters data from the host and sends them to a device that reconverts them into a format the receiving host understands. The 3044 simply repeats the signal over fiberoptic cable, Gilbertson claims.

The IBM 3044 can be viewed as a followup to the IBM 2944 channel extender, which was introduced in 1967. Both products attack the problem of how to extend the distance between hosts and peripherals and terminals without degrading response time. Before the advent of the 2944, control units could be placed 400 feet from the host and up to 32 terminals could be attached via coaxial cable up to 5,000 feet away. The 2944 extended the 400-foot maximum at which channel speeds (and thus response time) could be maintained to 4,000 feet.

The 3044 (which costs half as much as the 2944) extends the maximum distance still farther—to 6,600 feet. It transfers data to peripherals at speeds of 76,000 bytes (76 Kbytes) per second at 3,300 feet and 43 Kbytes per second at 6,600 feet. If the 3044 is hooked to an IBM 3088 Multisystem Channel Communication Unit, the combination transfers data in the faster data-streaming mode—used to send data to disks—at 1.25 Mbytes per second, at least 150 times faster than in non-data-streaming mode. A 3088 placed exactly 6,600 feet from a host can double the range of the 3044 to 13,200 feet.

(Continued on page 37)

**How can you get
your people together
with systems for
information management
that offer the flexibility,
cost-effectiveness
and reliability
of a phone system?**

Northern Telecom invites them to n

The Meridian SL-1 Integrated Services Network and the Meridian DV-1 Data Voice System. A line of information management products using twisted pair telephone wire for high-speed distribution to the desk. A direct result of our commitment to OPEN World™ and the simultaneous integration of voice, data, text and graphics.

The Meridian™ SL-1™, because of its unique design, gives you high-speed local area network capability based on twisted-pair distribution. With it, you can link the Meridian M4000 integrated terminals, M2000 digital telephones, the M3000 Touchphone™ and other vendors' terminals or computers into a system of up to 5,000 users. In addition, IBM™ PCs can share files, programs, and printers bringing more capabilities to your

users while reducing your costs.

It's a system offering over 300 Mbs of bandwidth, of which up to 40 Mbs is used to create a high-speed, media independent LAN. This innovative architecture allows all relevant media—

QUARTERLY SALES REPORT

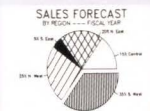
REGION	Q1	Q2	Q3	Q4
Northeast	124.2	135.1	145.3	156.7
Southwest	118.5	129.8	140.2	151.6
Central	130.1	141.5	152.9	164.3
Northwest	145.2	156.6	168.0	179.4
Southwest	156.3	167.7	179.1	190.5

DATA

MARKETING STRATEGY STATEMENT

1. MARKET ANALYSIS	2. COMPETITIVE ANALYSIS
3. SWOT ANALYSIS	4. MARKETING OBJECTIVES
5. MARKETING STRATEGIES	6. MARKETING PROGRAMS
7. MARKETING BUDGET	8. MARKETING EVALUATION

TEXT



GRAPHICS

voice, data, text and graphics—to be handled in a single, integrated system. And, it brings these capabilities to the desk at speeds of up to 2.56 Mbs over twisted pair.

This integrated system brings you powerful, new communication capabilities such as multi-media voice and text messaging, and local area networking for your PCs.

And, if you already have a Northern Telecom SL-1, it can be enhanced to offer the features of the Meridian SL-1. Shortly, you'll also be able to enhance a Northern Telecom SL-100™ just as easily.

The Meridian DV-1, like the Meridian SL-1, utilizes twisted-pair distribution. It's designed for applications of up to 100 users.

On it, data and voice move at speeds of 2.56 Mbs to the desk. And, due to its multi-processor architecture, users can switch from application to application at the touch of one or two buttons. They can also access their preferred UNIX™, MS-DOS™ and CP/M™ based application software, running on multi-user industry standard operating systems.

Users of the Meridian DV-1 can develop their own application software using standard languages including "C", COBOL, FORTRAN or BASIC with the aid of application development tools like generators, editors and debuggers, all available with the system. Applications can be programmed to interact with its call processing capabilities delivering custom integrated voice and data solutions.

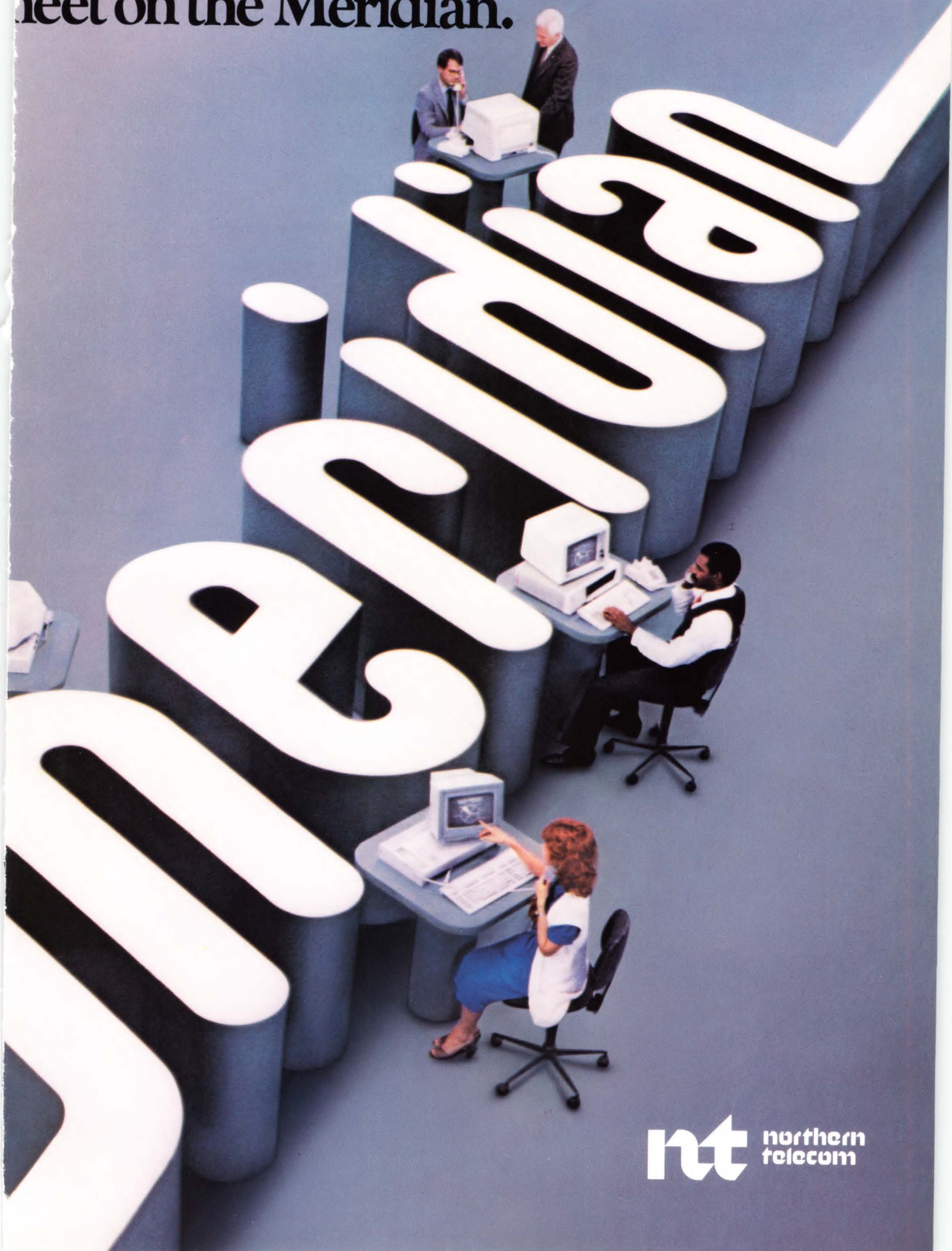
The Meridian DV-1 links the Meridian M4000 series of integrated terminals and IBM™ PCs at a speed of up to 2.56 Mbs to the desk. Other vendors' switching systems and computers also may be easily accessed.

The Meridian DV-1 will allow all relevant media—data, voice, text and graphics—to be handled in a single, integrated system. With voice access through the new Meridian M4000 integrated terminals or standard telephones, users have not only a multi-functional data terminal but also sophisticated phone features from which to choose.

And, because the Meridian line of products is based on Northern Telecom's digital telecommunications experience, these products will give you systems for information management with the kind of reliability you'd expect from a phone system. For more information on either the Meridian SL-1 or Meridian DV-1, write Northern Telecom Inc., P.O. Box 202048, Dallas, TX 75220; or call (800) 328-8800, ext. 003. In Canada, call (800) 361-7950.



meet on the Meridian.



nt northern
telecom

**When there's business to be done,
business meets on the Meridian.**



Meridian, OPEN World, Touchphone,
SL-1, SL-100 are trademarks of
Northern Telecom.
UNIX[®] is a trademark of AT&T Bell
Laboratories.
MS-DOS[®] is a trademark of Microsoft
Corporation.
CP/M[®] is a trademark of
Digital Research, Inc.
IBM[®] is a trademark of
International Business Machines Corp.

Printed in USA
© Northern Telecom 1985



NEWS BRIEFS

(Continued from page 32)

Achieving the higher data speeds will cost you. The 3088 costs from \$95,000 to \$145,000. The two 3044s needed for a fiberoptic link cost a total of \$17,000. IBM is offering fiberoptic cable at \$315 for a jumper cable and \$1.70 per additional foot, plus installation.

IBM offers a word of caution on the performance of control units and peripherals connected to the 3044 link. The performance of 3044-connected devices may not be the same as devices directly connected to the channel without the fiberoptic attachment. Further, IBM cautions that the performance of other devices on the channel—up to eight control units can be connected to a channel—may be degraded by the existence of a 3044 on the same channel. To Gilbertson, this suggests that MIS/dp managers may have to dedicate an entire channel to the fiberoptic attachment in order to obtain “near local” response time for medium-response peripherals, such as high-speed printers in continual use.

By increasing the distance that the host channel speeds can be supported, users will be able to reconfigure their equipment and local communications to take make better use of resources, say IBM and Channelnet representatives.

Gilbertson outlines four such configurations:

- Separate databases on different hosts up to 4 kilometers apart can be quickly updated by bulk transfer of files at the fast channel data speeds, instead of the slow speeds available by transferring data over telephone lines.
- Terminals will be able access information on different hosts at subsecond response times. This would fulfill the promise of IBM office-automation schemes, such as DISOSS, in which any terminal user can instantaneously send a document through a mainframe to any other user.
- Hosts in a campus could share resources better. Often, one host on a campus is working full time while another

in another building is underutilized. The new fiberoptic products could allow MIS/dp managers to balance workloads more easily.

- Corporations with separate hosts and printers could download printing jobs to other sites that aren't being used. □

RECOVER LOST DATA

Lost data may no longer be a problem for some users of Polaroid floppy diskettes. The Cambridge, MA-based vendor has a new free-of-charge service that recovers data from damaged disks when recovery is possible.

Users with disks damaged from heat exposure, coffee spills, fingerprints, or dust should call Polaroid's customer-service department for help. Polaroid will send users protective mailers for shipping disks to its data-recovery center in Cleveland.

When damaged disks reach the center, they are reconditioned and resealed in vinyl jackets, tested, and returned to users within 48 hours. If data cannot be recovered, Polaroid will send along a new disk and an explanation.

“We want to make sure our customers have every opportunity to recover as much data as possible from damaged disks,” says Iain Gilmour, marketing publicity manager. For more information, call (617) 577-2024.

MAIL-IN VDT SERVICE

Now instead of waiting for on-site service of your Lear Siegler VDT, you can mail it to one of the vendor's express-service depots and have it back in 48 hours. The Anaheim, CA-based VDT manufacturer has turned 28 of its 70 service centers throughout the country into Express Depots. Users pay the postage one way, and Lear Siegler pays for the return via UPS. The cost of the repair depends on the problem and the VDT model. The Express

Depot Mail-In service is a cheaper alternative for customers outside a 100-mile radius of a Lear Siegler service center. The vendor services VDTs outside this radius, but there is a hefty charge for the additional mileage. The other option is to bring the VDT to a service center. For more information, call (714) 778-3500.

BUDGET CUTS FOR ICST

The Reagan administration's 1986 budget proposal calls for a \$5 million cut in the federal government's allotment for the National Bureau of Standards' Institute for Computer Sciences and Technology (ICST). This 50 percent reduction would terminate 35 positions at the ICST, eliminating its computer-security program.

The ICST provides the public and private sectors with guidance on how to secure data. It developed Federal Information Processing Standards for the federal government and was responsible for issuing the Data Encryption Standard, an algorithm for scrambling data transmitted between terminals.

The ICST prescribes standards for federal use. Most of its other standards are voluntary, although the U.S. Department of the Treasury requires the use of data encryption in electronic funds transfers. The ICST also lends its support to groups that develop standards for the computer industry and makes recommendations to industries based on its research of security standards for the federal government.

The elimination of the ICST's computer-security program would affect private enterprise, according to Jack Bologna, publisher of *Computer Security Digest*. “These budget cuts will limit the amount of research on computer-security enhancement,” Bologna says.

This is the fourth consecutive year that a major budget cut was proposed for the ICST. In the past, Congress has restored the proposed cuts. □

"With deregulation, than ever to set up a

"AND
MORE WAYS
TO GET
CONFUSED."



"LUCKILY
THERE'S HELP.
SOMEONE WHO
UNDERSTANDS
OUR STRENGTHS."



"WHO CAN
FIGURE OUT
THE BEST WAY
TO INTEGRATE."



Presenting the Honeywell Network Design Center.

Honeywell is committed to providing customers with the best products and services available to get the most out of their information resources.

That's why we created our Network Design Center.

With deregulation of the telephone industry and the evergrowing number of network options, choosing the right alternatives can be difficult.

By going with Honeywell, you're assured of a network based on a solid

there are more ways network."

"FOR THE
BEST PRICE.
WITH THE
LEAST RISK."



"SOMEONE
JUST A
PHONE CALL AWAY."



"HELLO
HONEYWELL."



understanding of your system's strengths. And how they can be best used and integrated.

You'll get expertise complemented by advanced analytic and simulation methods and techniques.

And, you'll get a realistic prediction of investment costs and potential savings opportunities relative to the design you choose.

Planning, support, problem analysis, and fine tuning are all part of our Network Design Center service.

It's only a part of what makes Honeywell's networking and data communications capabilities so worthwhile. And when you consider the very practical way it can help you *apply* our technology, it just might be the most important.

We know the value of good communications. Call us today and hear for yourself.

Call 1-800-328-5111 extension 2759. Or write: Honeywell Inquiry Center, MS 440, 200 Smith Street, Waltham, MA 02154.

Together, we can find the answers.

Honeywell

PERSONAL COMPUTING

by Susan Foster Bryant, Microsystems Editor

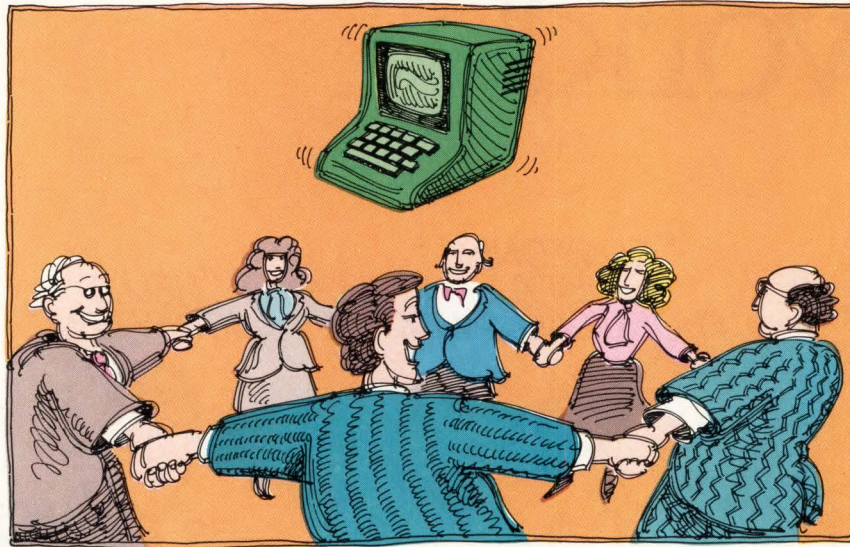


Illustration by Peter Bono

SPREADING THE USER-GROUP GOSPEL

Managing personal computing in a large organization is in itself the management of change. It wasn't that long ago that office workers used only calculators for math, only columnar paper for financial analyses, only typewriters for correspondence, and only weekly planners or calendars to manage projects. That may not have been long ago, but it *was* yesterday.

Corporate employees today have access to personal computers and a pressing need for knowledge about the hows and whys of information processing. Even if a corporation sponsors personal-computer training, has an information center, MIS/dp liaisons, and perhaps a computer store, its employees need more information. They need to share experiences, biases, questions, and solutions. They need a forum to discuss what they have found to be the best—and worst—of the personal-computing world. Large organizations have begun to recognize this need and

to encourage the formation and growth of user groups.

How do you set up a user group when you're responsible for 18,000 users? "We'd need a stadium to pack them in," says Henry Kee, vice president of personal-computer systems and office-technology architecture at Chemical Bank, New York. When Chemical Bank acquired large numbers of micros, Kee began a user group for employees and a newsletter that presents information germane to personal-computer users.

Kee's user group is organized around a unique concept. "Instead of having a single user group," Kee explains, "what we have is a two-tiered user group. The first tier is the corporate-user group, the second tier is made up of the user groups in different divisions." Chemical Bank's corporate-user group meets bimonthly and includes divisional liaison managers—office-automation officers and personal-computing liaison officers. During

the months when the corporate-user group does not meet, Kee meets with individual divisions when they hold their own user-group meetings.

"We like to offer two topics that we cover in detail," Kee says of the meetings' format. "We also invite vendors to talk about what they're doing that's new. Sometimes we invite a software distributor to discuss current trends. There is no difficulty in getting a vendor's representative to come in; they use our user groups as a forum.

"Another routine we have at meetings is to have the users themselves make presentations on what they are doing within the bank. We do this because employees always want to hear about what other employees are doing. For example, spreadsheet templates for dedicated applications are shared. And we often give a presentation ourselves on Chemical's personal-computer policies.

"For example, we adopted the IBM

(Continued on page 44)

TATUNG

The giant is awake.



VVT-7220
(VT-220 emulation)



CM-1370
13" RGBI High Resolution

Since 1918 we've been quietly designing, manufacturing, and distributing a broad range of products for industry, business, and consumers all over the world. And so we've quietly grown to be a multi-national company with almost a billion in sales from the world's toughest markets. Markets that demand quality, performance, and reliability. Which is why Tatung terminals and monitors have become the choice of important systems designers.



Tatung *monitors* are compatible with virtually all popular computer systems. Each model offers superior resolution and CRT color imagery, along with controls for precise picture "tuning". Tatung *terminals* offer operational flexibility, compatibility with all popular systems, and day-in-day-out reliability. But, no matter which model you choose, no other terminal or monitor offers as much...for so little.

U.C.M. COMPUTER PRODUCTS
CANADA LIMITED
7225 Woodbine Ave., Unit 119
Markham, Ontario L3R 1A3
(Canada only) 1-800-387-9678/
1-416-475-1209 Telex: 06-986222

TATUNG

WESTERN MICRO SYSTEMS
A Quality Distributor
Serving the 13 Western States
Western States 1-800-544-0020
In California 1-800-338-1600

For complete information call toll free: 1-800-421-2929. In California, call (213) 979-7055.
TATUNG COMPANY OF AMERICA, INC., 2850 El Presidio, Long Beach, California 90810.

Sailing on the changing tides of business, there is no room for uninformed decisions.

You don't go sailing without the right navigational instruments.

And you don't make business decisions without the right information.

With Dow Jones Straight Talk™ and your Macintosh™ personal computer, you have the right information to make seaworthy business decisions.

Widgets, Inc.: To Acquire or Not?

Let's say you need to know everything you can about Widgets, Inc. and the entire miniwidgets industry. You're thinking about an acquisition. You need solid research.

And you need it for the important meeting at 4 p.m.

Dow Jones Straight Talk: Helping You Make Informed Decisions

Straight Talk can help. Straight Talk could even make you a hero. Here's how: Two clicks of the mouse and you're logged on to the information you need with Dow Jones News/Retrieval®, the foremost electronic resource for business and financial information, and other communications services.

With pull-down menus, you can move easily between databases, checking current news and stock quotes, reviewing exclusive stories from the up-to-date file of **The Wall Street Journal**, searching out financial information on a specific corporation or industry.

Now use your Clipboard, Note Pad and Scrapbook to save it.

Since Straight Talk supports MacWrite™, you can thread all this data together with your own informed comments.

Now the final report: Use the different type sizes and styles to highlight special sections for your boss. Your conclusion: Don't acquire the company. It's on thin ice.

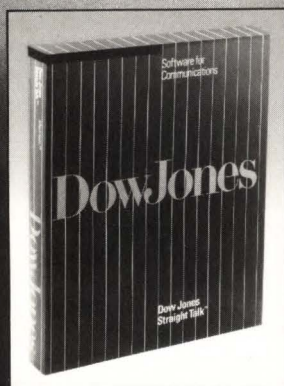
With Straight Talk, hours worth of research can be condensed into just minutes.

And, as the meeting ends, you can barely hold back that big grin.

From now on your career should be smooth sailing.

A World of Information on Your Desk

At \$79, Dow Jones Straight Talk is the least expensive, most diligent researcher and electronic know-it-all you'll ever come across.



Dow Jones Software. For informed decisions.

Dow Jones News/Retrieval is a registered trademark of Dow Jones & Company, Inc. Dow Jones Software and Dow Jones Straight Talk are trademarks of Dow Jones & Company, Inc. Macintosh is a trademark licensed to Apple Computer, Inc. MacWrite is a trademark of Apple Computer, Inc.

Copyright © 1985 Dow Jones & Company, Inc. All Rights Reserved.

In addition to business and financial information, you can click into world and national news, sports, weather, an encyclopedia, airline schedules and fares, movie reviews and MCI mail.

And Straight Talk is from Dow Jones, publisher of **Barron's** and **The Wall Street Journal**, and for over 100 years a standard in timely, reliable information.

Dow Jones Straight Talk for the Macintosh. A precision instrument designed to make sure your ship comes in.

To obtain a free brochure and information on where you can conveniently purchase Dow Jones Straight Talk, fill out the coupon or call:

1-800-345-8500 ext. 272

(Alaska, Hawaii and foreign call 1-215-789-7008 ext. 272)

Fill out this coupon and mail to:
A. Callahan, Dow Jones & Company,
P.O. Box 300, Princeton, N.J. 08540.

Yes, please send me a free brochure on
Dow Jones Straight Talk™ and
Dow Jones News/Retrieval®

Name _____

Company _____

Address _____

City _____ State _____

Zip _____ Phone _____

Dow Jones™
Software

CLD



"I think we turn left here."

(Continued from page 40)

3278 emulation card because we did not want to have many file drivers out on the whole system. Explaining something like this to users helps them accept the policy. When users are given a flat 'no' to an idea or a proposal, they tend to fight back. So user groups provide both direction for users and forums for policy explanations.

"Also, we may talk about the current state of development in micro-to-mainframe connections, or how personal computing relates to data security. We also go over issues, such as what's in the public domain in terms of software. At the end of each meeting we have a period called 'random access,' during which users may ask questions about products or company policies regarding micros." When Kee meets with the individual divisional managers, either he or one of them will give a presentation on some topic of interest to personal-computer users.

For both of the Chemical Bank user groups, other kinds of information are provided by the bank's personal-computing newsletter, which covers such topics as how to write a program that will run on many personal computers without a recompilation, how a user can transport data back and forth between software packages, such as Condor (Phoenix Computer Corp., Culver City, CA), and 1-2-3 (Lotus Development Corp., Cambridge, MA), or how a user can bring up a system without going through the full memory check. "These are topics of general interest, but we also try to appeal to the different levels of technical knowledge our users have," Kee says.

"We encourage users to attend our corporate-user-group meetings. On a sustained basis, the meetings are attended by a few hundred users—20 to 30 users for each of Chemical's divisions. The turnout is that high because the meetings are held bimonthly. Managers don't get upset about losing someone for three hours once every two months."

Chemical Bank has more than 1,500 IBM Personal Computers, Professional Computers from Wang (Lowell, MA), and Rainbows from Digital Equipment Corp. (Maynard, MA). Some are net-

"User-group meetings are a little like group therapy."

Galgano, Grumman

worked, but most are not. For the most part, users run database-management, spreadsheet and project-management applications on their micros. Some word processing is done on micros, but the bank depends mainly on its dedicated word-processing systems.

Does Chemical Bank's corporate-user group have input on purchasing decisions? Not yet, says Kee. "The meetings are a forum for that, but the users haven't availed themselves of it yet." Users also have the forum they need when they want the bank to provide services for and answers to their personal-computing needs.

What will become of Chemical's user groups in the future? Kee foresees the support functions for personal-computer users as being needed at the grass-roots level of the organization as the corporation brings in more micros. "User groups are here to stay and the need for them will continue to grow," Kee says.

A similar philosophy is espoused at Grumman Corp.'s Bethpage, NY, headquarters, where the Aerospace and Data Systems divisions are busy fulfilling government contracts for aircraft and electronics products. With the arrival of micros in 1982, management began looking for ways to make sure the IBM, Wang, and Hewlett-Packard (Palo Alto, CA) personal computers that are scattered throughout Grumman's satellite offices are used to full effect. Management also was worried that without support, users would not increase their understanding of using micros.

User groups were formed about eight months ago, when the manufacturer initiated bimonthly meetings to zero in on topics that demanded users' attention. Topics covered so far have included micro-to-mainframe links, communications, bulletin boards, data encryption, and data integrity, accord-

ing to Judy Galgano, senior specialist for office automation. With a staff of 13 managers dedicated to personal computing, Grumman has organized user groups to find out what can be done to make personal computing easier and more productive for users.

These groups, unlike those at Chemical Bank, are not by invitation only; any employee who wants to come may do so. Grumman's user-group meetings usually last 90 minutes, with employees sharing information on graphics packages, how to convert Lotus files to dBase III (Ashton-Tate, Culver City, CA), and how to get disinterested employees "turned on" to micro use.

In addition to the open-invitation user-group meetings, smaller meetings of "leaders"—users from each department who are particularly interested in personal computing—are held. These smaller groups talk about personal-computing issues and put together memos for other users in the leaders' departments.

Grumman also has traveling user groups. Galgano recently returned from Milledgeville, GA, where she held a meeting at a Grumman location. "We invited employees from all over the Southeast to join us, and we essentially recreated what user groups at headquarters have done. We brought some of our corporate trainers with us and attempted to solve the problems at this location, which does not have mainframe resources available to it and relies very heavily on micros."

With 300 personal computers—mostly IBM PCs—Grumman is attempting to serve the needs of any user who has access to a micro—even to the point of holding user-group meetings for specific applications. For example, meetings have been held on the use of Lotus 1-2-3 and word-processing software from Multimate International Inc., East Hartford, CT. Summing up the benefits of user groups for all corporations, Galgano says, "We are trying to get information to all users, all at once. Many users are in their own little worlds and have problems they think are only theirs. User groups make them realize that this is not so. They feel good about themselves and computers. It's a little like group therapy." □



A PERFECT FIT

- 16-user support • Full-function relational DBMS
- SNA, Ethernet, X.25 • Scientific languages

The new Perkin-Elmer 3203 fits a lot into a little package. Designed to fit the office, laboratory or factory environment, it fully supports up to 16 users — at the lowest cost per user in its class.

And the 3203 is a full member of our Series 3200 family of supermini-computers. So as your application grows, your computer can too, without sacrificing software or peripherals.

Mainframe-class software

Tailored for real-time applications,

the 3203 runs not just a subset, but full versions of powerful Perkin-Elmer software. Like a complete relational database manager. Comprehensive networking. Even our high performance scientific languages.

That's real supermini versatility now and for the future, at a price starting as low as \$10,292.*

Featuring up to 4MB of memory, 170 MB fixed disk storage, a cartridge streaming tape, plus an SCSI bus for peripheral flexibility, this

low-cost entry into Perkin-Elmer computing is easy to install, configure and use. All in all, a very fitting choice.

**Fit us in:
1-800-631-2154.**

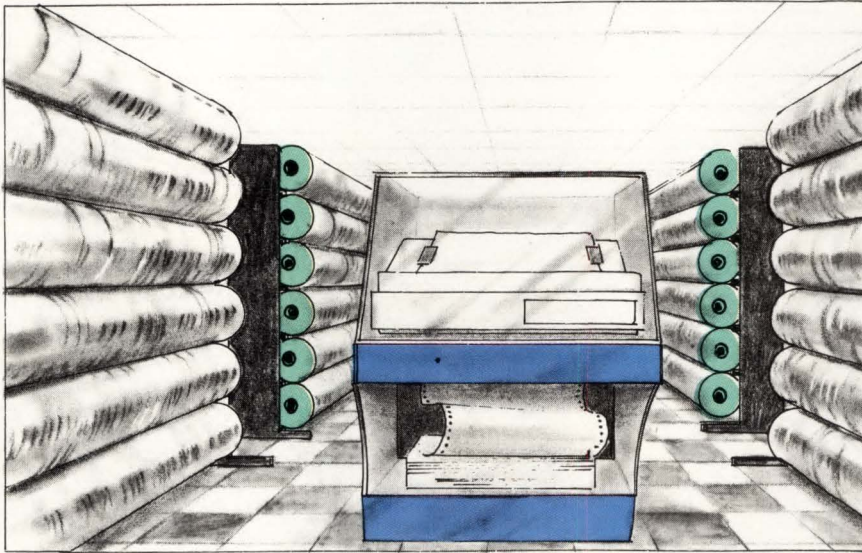
Or contact the Perkin-Elmer Corporation, Two Crescent Place, Oceanport, NJ 07757, (201) 870-4712.

*OEM quantity 100; single unit price \$16,600 (U.S. prices only)

PERKIN-ELMER

STRICTLY SOFTWARE

by David Kull, Software Editor



GETTING THE INFORMATION OUT

I want that report on my desk first thing Monday morning!"

Many an executive has uttered these words, putting the fear of the Top Brass into information-age subordinates. *The report!* MIS/dp managers recognize its importance, but wonder how in the world they or their harried staffs are ever going to get it done on time. For managers under the gun, finding ways of getting the information out is serious business.

The latest trend in generating reports is to let report-demanding executives get the reports themselves. Several approaches are available to allow nontechnical users to extract information from bread-and-butter applications like payroll or inventory control.

One approach is to run the applications on a relational database management system (DBMS) with end-user reporting facilities. Running all applications on a full-blown DBMS can provide benefits that go beyond facile reporting. Applications that run on a re-

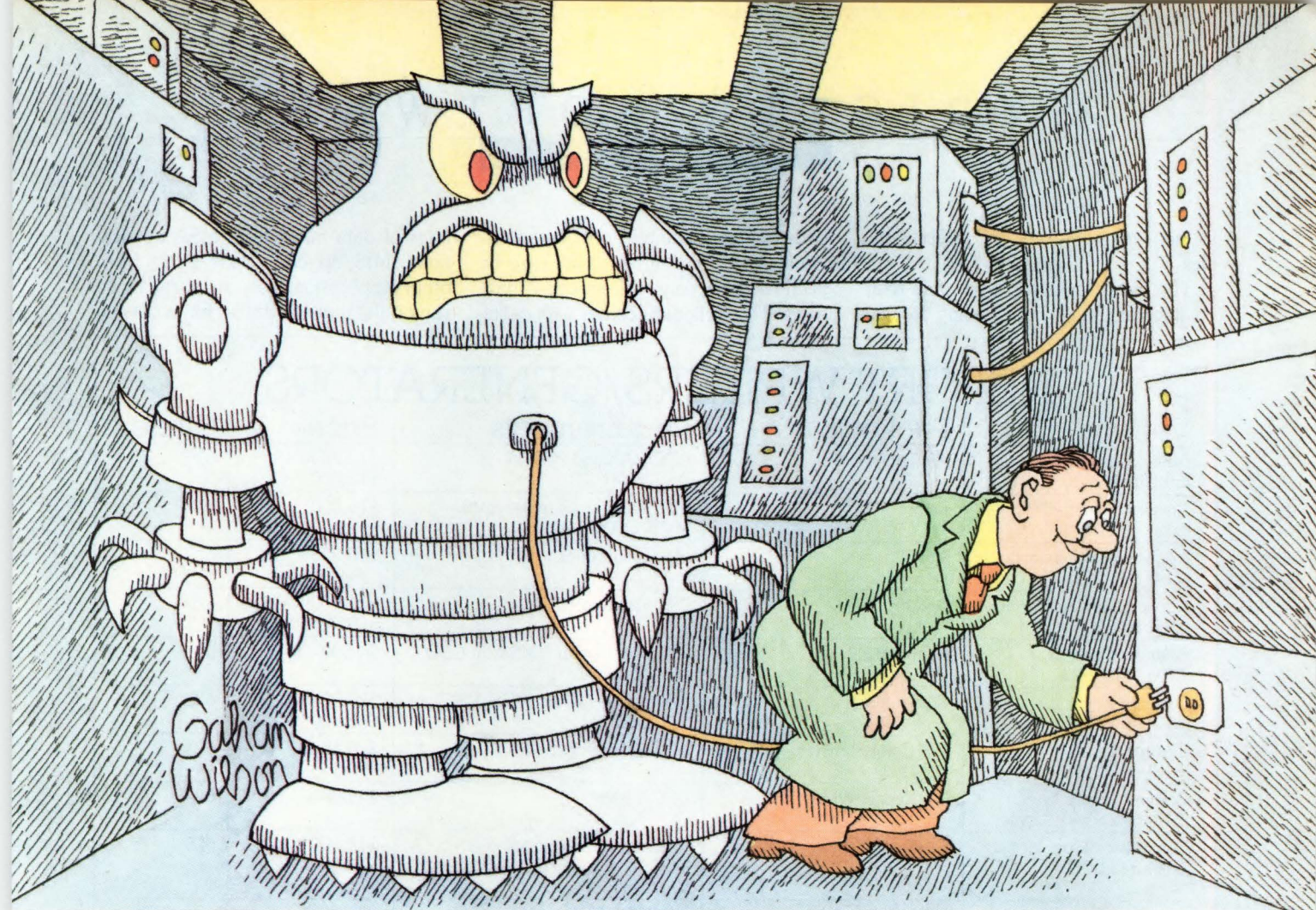
lational DBMS can share data, and developers can integrate new applications into the system easily. But a full-blown DBMS with application-development and query facilities has a six-figure price tag—not including the costs of converting applications to the system—and means at least partial abandonment of investments in systems operating under older technologies.

A second way to get information quickly to nontechnical personnel is to download data into an information-center DBMS designed for trained users. Information-center DBMSs offer ample facilities for data analyses and give users easy access to the data they need. But consolidating information from numerous files into an information-center DBMS may require some awkward maneuvering, as well as the creation of duplicate files. An information-center DBMS requires a significant commitment of computer resources.

If expensive production or information-center DBMSs are out of the ques-

tion, report-writing applications may be a solution. Report writers are not perfect. They generally provide users with only limited data-analysis and computational features. Some report writers are too complex to be used by nontechnical personnel. But report writers require a relatively small commitment of computer resources, and they use information from existing files and databases to generate reports online, responding to a request immediately, or in batch, acting on the request at a more expedient time. What's more, report writers are relatively inexpensive.

Management Science America (MSA), Atlanta, offers a report writer called Information Expert free to buyers of MSA's mainframe applications. Information Expert allows users to create reports from MSA applications files, and from files of other programs. The program is organized around a data dictionary, which contains definitions of all items and data views—logical groupings of items that users are apt to want



Some people just ask for trouble.

Isn't it amazing just how many people go around asking for trouble?

Why, we're willing to bet there are people in your DP department this very minute flirting with disaster.

They're running the risk of a misplaced DD override, an invalid concatenation, or some other equally obscure JCL error bringing the whole kit and caboodle to a screeching halt.

When all they have to do to keep things running smoothly is use our JCLCHECK™ program.

JCLCHECK software catches all JCL errors and provides complete, on-line JCL validation and concise error diagnostics. Plus complete documentation on a job stream or entire production system suitable for insertion in the run

book. And it can operate under TSO, TONE, ROSCOE or CMS.

No more errors — no more troubles. It's that simple. And successful.

Over 400 DP departments now use JCLCHECK software to correct the errors of their ways, and save money at the same time.

To put it in another perspective, we'll send a sales representative out to analyze *your* operation and provide a written statement on exactly how much time and money you're spending on JCL errors. And how much you could be saving with the JCLCHECK package.

Still, some people are destined to find these things out the hard way.

To that we can only add, better them than you.

Yes, I want to stop living dangerously.

- ☐ Send me details on the JCLCHECK program.
- ☐ Have a representative call me.

NAME

TITLE

COMPANY

ADDRESS

CITY

STATE ZIP

PHONE OPERATING SYSTEM

Return to: Triangle Software Co.,
4340 Stevens Creek Blvd., Suite 275, San Jose,
CA 95129, (408) 554-8121.



Triangle Software Company

If you don't ask for us, you could
be asking for trouble.

to see together—in an application's files.

The data views help users find related information without having to scan

loads of files. They also provide an element of security; certain users may be given access only to specified data views. The dictionary comes with defini-

tions of data items from MSA applications. MIS/dp can define items from other application files, including those run on the major DBMSs, for access by

REPORT WRITERS/GENERATORS

Vendor	Package	Requirements	Price	Circle
Amcor Computer (502) 491-9820	Amwriter	DEC VAX and PDP-11	\$1,500 to \$12,000	617
Answer Systematik (613) 828-0114	Seth	IBM mainframes under MVS, MVT, or DOS/VSE	\$18,500	618
Applications Software (714) 891-2616	ASI-ST	IBM mainframes	\$40,000	619
Applied Data Research (201) 874-9000	Datareporter	IBM mainframes	\$11,900 (DOS) to \$14,900 (OS)	620
Business Controls (201) 340-9893	Report Builder I	DEC VAX under VMS with CDD and a compiler	\$4,500	621
Carleton (617) 494-1232	CQS-Infotec	IBM systems under MVS, VS(E), or VM/CMS	\$25,000 to \$33,000	622
Cincom Syst. (513) 662-2300	TIS Computer Retrieval	IBM mainframes	\$26,400	623
Collier-Jackson (813) 872-9990	CJ/Report Writer	DEC VAX	\$7,500	624
Computer Assoc. Int'l. (516) 333-6700	CA-Earl	IBM mainframes under DOS/VS(E), OS/VS1, MVS, or VM/CMS	\$13,000 to \$16,500	625
Computer Data (818) 991-4060	CDIS Report Writer	HP 3000; DEC VAX	\$3,500	626
Cullinet Software (617) 329-7700	Culpit	IBM mainframes under OS or DOS	\$27,000	627
Dylakor (818) 366-1781	DYL-260	IBM mainframes under OS, DOS, CMS, or SSX	\$11,000	628
	DYL-280	Same systems	\$11,000	
	DYL-280 II	Same systems	\$15,000	
General Data Syst. (215) 985-1780	Dx Report Generator	IBM mainframes	\$10,000 to \$15,000	629
Gentry (415) 547-6134	PAL (Programmerless Assist Language)	HP 3000	\$7,000	630
HMS Computer Syst. (918) 494-0992	AIM/3000 Dedicated Report Writer	HP 3000	\$2,000	631
Infocentre (416) 678-1841	Reactor	HP 3000	\$8,000	632
Informatics General (818) 887-9040	Answer/DB Personal Reporter	IBM mainframes with IMS/DC, CICS, or TSO	\$45,000 (OS)	633
	Answer/DB Inquiry	Same systems	\$30,000 (DOS)	
	Answer/DB Inquiry module for Answer/DB Personal Reporter	Same systems	\$45,000 (OS) \$30,000 (DOS) \$15,000 (OS) \$10,000 (DOS)	
Information and Systems Research (ISR) (412) 262-5507	Voila	DEC VAX and PDP-11	\$1,250 to \$2,500	634
Information Builders (212) 736-4433	Focus	IBM mainframes	\$43,000	635
J&S Assoc. (312) 882-2878	Mars (Management Analytical Reporting System)	Honeywell DPS 6 under GCOS 6 Mod 400	\$3,800	636
Kennerly Assoc. (301) 441-1390	Fires (Flexible Information Reporting and Editing System)	DEC systems	\$14,500	637

REPORT ON PROPOSED REGIONAL CAMPAIGN

OK -
Please advise
Regional Offices.

In order to achieve the anticipated yield of 20 percent on a projected investment of \$50,000, we recommend that a regional campaign be mounted. The goal of the campaign should be to increase sales per location by more than 10 percent over the existing projections. If this goal is met, the desired 20 percent return on investment will be assured.

Objectives

1. The overriding objective in this campaign is to generate broad-based awareness at the consumer level resulting in increased sales over projections and a 20% net gain on the marketing investment.
2. The secondary objective is to establish a preliminary benchmark to test and monitor the effectiveness of consumer advertising and the print vehicles to be utilized.

Strategy

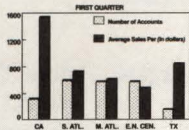
The major emphasis of this campaign is focused on the consumer audience. However, the financial success of this program is dependent upon increased sales at the dealer level prior to the consumer campaign during the fourth quarter.

REGIONAL SALES AND DISTRIBUTION

The following data is based on a review of first quarter sales by each of the top five regions. The methods of grouping regions is consistent with the media. Since cost-effectiveness of media is a priority, compatibility with regions is necessary.

Promotion Areas

First Quarter Sales by Regions - In thousands

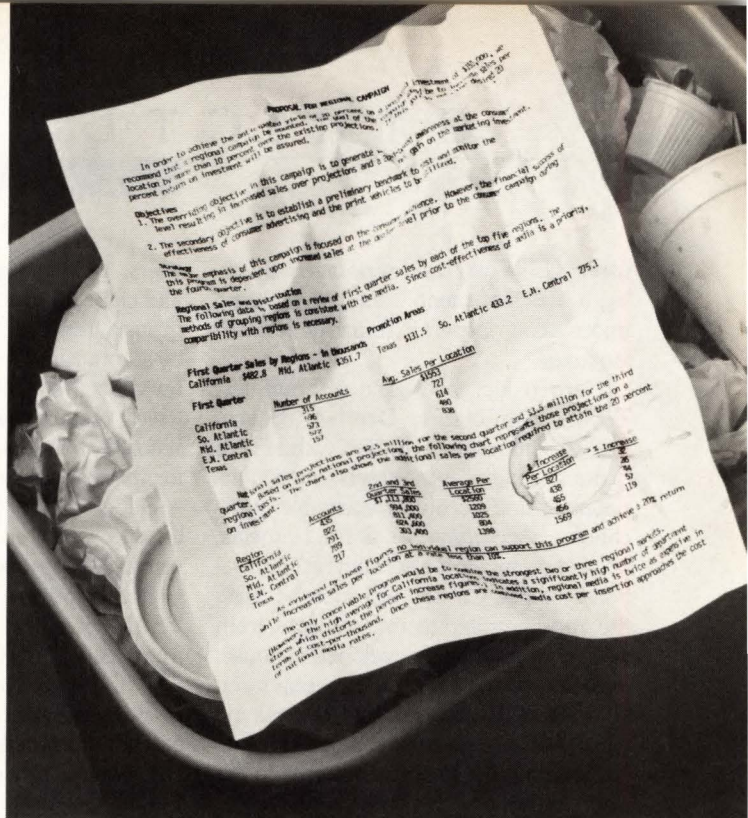


National sales projections are \$2.5 million for the second quarter and \$3.5 million for the third quarter. Based on these national projections, the following chart represents those projections on a regional basis. The chart also shows the additional sales per location required to attain the 20 percent on investment.

Region	Accounts	2nd & 3rd Quarter Sales	2nd & 3rd Quarter Projections	% Increase
California	450	\$1,115,000	\$2,500,000	122
So. Atlantic	802	\$ 894,000	\$1,000,000	112
Mid. Atlantic	791	\$ 811,000	\$1,020,000	126
E.N. Central	789	\$ 826,000	\$1,000,000	121
Texas	217	\$ 301,000	\$1,000,000	332

As evidenced by these figures an individual region can support this program and achieve a 20% return while increasing sales per location at a rate less than 10%.

The only conceivable program would be to combine the strongest two or three regional markets. However, the high average for California locations indicates a significantly high number of department stores which distorts the percent increase figures. In addition, regional media is twice as expensive in terms of cost-per-insertion. Once these regions are combined, media cost per insertion approaches the cost of the national media rates.



Publisher-quality text and graphics

Typical word-processor output

Some business documents make you more successful than others.

Now, the power of publisher-quality text and graphics in a desktop office system.

The new Compugraphic Personal Composition System™ is even easier to use than a word processor, yet it can make all your office documents—from proposals to reports to memos—more persuasive, professional-looking, and successful by setting them in true publisher-quality type and graphics. And the system's quiet laser printer makes multiple plain-paper copies or overhead transparencies accessible—right at your desk.

Compugraphic, the largest manufacturer of composition and publishing systems, designed the Personal Composition System especially for *your* department.

This revolutionary system features simple menu-and-mouse operation that lets you easily merge graphics with text, set multiple columns, and automatically hyphenate and justify lines. You can choose from 25 typestyles in 66 sizes each—that's 1,650 fonts on line.

These features mean that documents look more professional. They also mean that you can have documents that are *proven* to be more credible, professional, and persuasive.

To find out more, send for a free research paper on using publisher-quality text and graphics to make your everyday business communications more effective.

cg compugraphic®

Please send me ☐ Free research paper ☐ Product literature

NAME _____

COMPANY _____

STREET _____

CITY _____

ZIP _____

TITLE _____

TEL. () _____

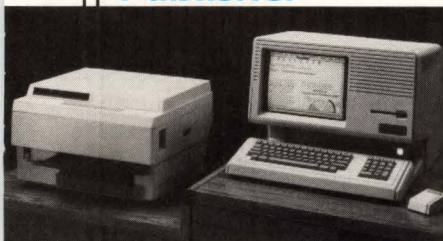
STATE _____

Compugraphic Corporation
200 Ballardvale Street
Wilmington, MA 01867
(617) 858-5800, ext. 2301
Literature Dept.

CIRCLE 69

CD

The
"Personal"
Publisher



The Compugraphic Personal Composition System
(a trademark of Compugraphic Corporation)

users. Users can build reports by checking a series of menu items, or by using Information Expert's fourth-generation language.

Carnett Inc., a division of Southeast Toyota Distributors, Deerfield Beach, FL, uses Information Expert with MSA's general-ledger, fixed-assets, accounts-payable, and accounts-receivable applications. According to John Lamelas, project manager for accounting information systems, Carnett will soon be using the report writer to extract data from several applications developed in-house, including systems for tracking leases and installment loans and for determining which vehicles go to which dealerships.

"Defining the in-house systems to the data dictionary is time consuming," Lamelas says. "Four technical staffers are working on that right now. But once they're done, the report writer will be a real time-saver." Lamelas expects 100

users, including executives, managers, and clericals, to soon generate their own reports using Information Expert's step-by-step approach. Their queries, developed online, will run as batch jobs, which means users may have to wait seconds, minutes, or perhaps overnight for their responses.

Superior Oil Co. Inc., a Houston-based oil producer, has used the Answer/DB report writer from Informatics General to give users access to its VSAM files and major DBMSs, IMS from IBM and Adabas from Software AG of North America (Reston, VA). Answer/DB processes users' queries in batches; companion program, Answer/DB Inquiry, processes queries online.

Carl Garrison, manager of data processing at Superior Oil, says users have been pleased with the response times of Answer/DB. The number of users has grown from about 50 in late 1982 to

more than 1,000, located nationwide and in London. At first, the sole users of the report writer were accountants, who used Answer/DB to analyze the books after the closing of each fiscal period. Now, Answer/DB has a wide range of users, including human-resources and engineering personnel.

According to Garrison, Superior Oil wrote its own program to prompt Answer/DB users in formulating their requests. The program produces the necessary job-control language based on responses to the prompts, assigns priorities to reports based on both responses to the prompts and the content of the requests, and monitors the resources used. MIS/dp uses the monitoring information to determine chargeback fees. It also analyzes the data to determine which files users are most interested in and reconfigures the files accordingly.

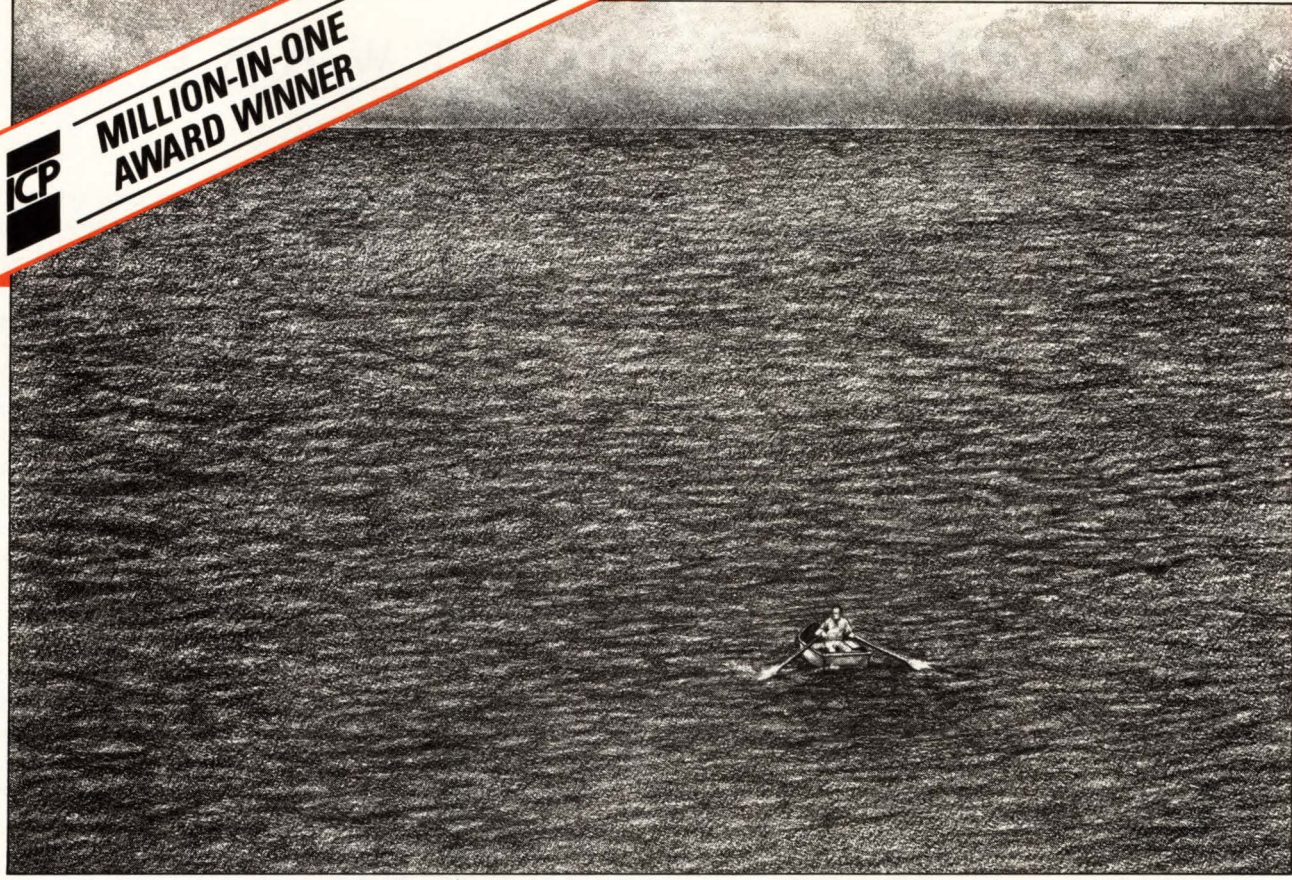
(Continued on page 52)

REPORT WRITERS/GENERATORS

Vendor	Package	Requirements	Price	Circle
McCormack & Dodge (617) 655-8200	Millennium Matrix Report Writer	IBM mainframes under DOS or OS/MVS	\$25,000	638
Multiplications Software (617) 547-8050	Imagine	IBM mainframes	\$59,500 (OS) \$45,000 (DOS)	639
On-line Software (201) 592-0009	Executrieve	IBM mainframes running CICS	\$20,000 to \$30,000	640
	Omnalink	Same systems with IBM PCs	\$10,000 to \$30,000 plus a per-micro fee	
Pansophic Syst. (312) 986-6000	Easytrieve Plus	IBM systems under DOS/VS(E), VM/370, or VM/PC	\$21,000 (DOS) \$27,000 (OS)	641
Park Software (206) 284-4025	Xentis	DEC VAX	\$1,000 to \$7,000	642
Protos Software (512) 480-0865	The Write Stuff	HP 3000	\$8,500	643
SAS Institute (919) 467-8000	SAS	IBM mainframes and PC XT/370 or PC AT/370	\$8,000 (first year)	644
	SAS/FSP	Same systems	\$5,000 (first year)	
Scientific and Business Syst. (213) 313-1340	Easywork	Honeywell systems	\$6,000 to \$27,500	645
SCA Products and Svcs. (212) 532-2990	Gateway Environment	IBM mainframes under VM or MVS with Focus, Ramis, or Nomad 2	\$18,000	646
	Gateway Reporting	Same systems	\$23,500	
Software Int'l. (617) 685-1400	Comprehensive Report Writer	IBM S/34, S/36, or S/38 under OS or DOS; HP 3000; Sperry 9030 or 1100 under OS/3, 80; Wang VS; Data General systems	\$4,000 to \$4,500	647
	Transaction Analyzer	IBM mainframes under DOS, OS, VS1, VS2, or MVS	\$7,300 to \$9,700	



**MILLION-IN-ONE
AWARD WINNER**



Before VM Magic, embarking on a migration from one disk type to another was a formidable undertaking.

At last, an effortless path for DASD migration.

Now you can migrate to the new, faster disk device types in only the time it takes to copy your files—a matter of hours, instead of months or years consumed by program and job control conversions.

VM MAGIC bridges the distance between incompatible disk device types and guest operating systems running under IBM's Virtual Machine Facility (VM) *without* conversions or program modifications.

That's right. VM MAGIC enables your system to store and retrieve data from any type of disk device, regardless of operating system, access method or software.

Get greater economy and performance without waiting.

With VM MAGIC you save more than the manpower expense of a long, labor-intensive conversion effort. You also reduce hardware and energy expenses, because with VM

MAGIC you can respond to *any* of the disk device requirements of guest operating systems using *any* DASD. Save thousands of dollars in disk rental, maintenance and operating costs by eliminating outmoded or unnecessary disk device types.

Expand your options under VM.

VM MAGIC also lets you:

- increase system performance by migrating to, and taking advantage of, new

technology disk hardware.

- select disaster recovery and backup sites without regard for disk configuration.
- prolong the life of your current software by eliminating its dependence on a specific disk environment.
- make decisions about hardware upgrades, program modifications and conversion efforts in a logical, orderly way.

For more information on the time and money-saving applications of VM MAGIC in your installation, call SDI at (415) 572-1200.

SDI[®]

SDI, 1700 SOUTH EL CAMINO REAL, SAN MATEO, CALIFORNIA 94402, TELEPHONE (415) 572-1200

CIRCLE 24

For example, if files stored on tape are being heavily used, MIS/dp might move them to disks. Conversely, if certain disk files have attracted little attention, they might be moved to tape.

By assigning each report a priority classification, MIS/dp can use its resources more efficiently. A report that may entail culling through two or three years' worth of data can be put in the overnight hopper; simpler requests are handled relatively quickly. According to Garrison, 75 percent to 80 percent of requested reports are turned around in five minutes. "Typically, users enter four or five queries at a time through a terminal, go about their business, and return later to pick up the reports at a nearby printer," Garrison says.

Like MSA's Information Expert, the Answer/DB report writer offers a data-view feature. An employee from Superior Oil's user-services department is responsible for setting up data views under Answer/DB. That employee consults with a liaison in each user department to ensure the usefulness of the data views.

At Superior Oil, new users of Answer/DB receive two and a half days of training, Garrison says. The trainees learn techniques for designing efficient

searches by developing reports using terminals located in a training room. A key element of training, Garrison says, is instilling an understanding of the timing of data updates so that the users can be sure they are searching the correct file versions.

Of course, allowing nontechnical users to gain access to live files through report writers means running the risk of having those users make mistakes with the files. For this reason, several report writers can be used with security packages to control access to data. But even without security software, organizations can develop file-protection procedures on their own. At Liberty National Life Insurance, Birmingham, AL, programmers use the Easytrieve Plus report writer from Pansophic Systems Inc. to field ad-hoc report requests. "Nontechnical users can have a hard time sorting out the data," says Ken Johnson, vice president of information services at Liberty National. "Programmers can go right in and dig out the information that's needed."

Queensboro Community College in Bayside, NY, uses the CA-Earl report writer from Computer Associates International Inc. to give users "read-only" views into databases that contain stu-

dent information. Users can view and extract data in a variety of ways, but they can't manipulate the stored information.

At E.F. Hutton & Co. Inc., the New York-based brokerage, MIS/dp provides users with the files from which they create reports using Data/Analyzer from TSI International Corp. In some cases, programmers delete sensitive portions of the files before passing them along to users. "If a department wants to go into any files, the request comes through me," says Ed Maggio, assistant vice president of MIS/dp operations and security at Hutton.

About 150 users at Hutton create reports with Data/Analyzer, Maggio says. The personnel department recently began using the package to develop all its reports for Hutton's employee-savings program. In addition, a nontechnical employee in MIS/dp uses Data/Analyzer to fill many requests for reports that come through the regular application-request channels. Without such a service, the reports would have to be created in Cobol by programmers.

Some organizations may place a very high value on rapid turnarounds of reports, both to get the reports out

(Continued on page 145)

REPORT WRITERS/GENERATORS

Vendor	Package	Requirements	Price	Circle
SPSS (312) 329-2400	SPSS-X SCSS	IBM mainframes DEC Systems 10 and 20, VAX, and PDP-11; HP 3000; other systems	\$6,500 \$6,000	648
System Dynamics (416) 475-5155	Report Writer Easi Report	Honeywell DPS 6 under GCOS; DEC VAX	\$5,000 \$3,000	649
Systems Mktg. Consultants (617) 682-2380	SMC/Report	Honeywell DPS 8, Level 66, Series 6000	\$1,000	650
System Support Software (513) 435-9514	Quikwrite Quikjob	IBM mainframes IBM mainframes under DOS, OS, or VM/CMS; Sperry System 80 under OS 3	\$8,500 to \$9,500 \$6,500	651
Technalysis (612) 925-5900	Turf (TPS 6 Utility Report Facility)	Honeywell systems under GCOS 6 Mod 400	\$6,000	652
Thorn EMI Computer Software (617) 938-8811	Data-Man II	IBM systems under VM/CMS, OS/VS1, MVS, or DOS/VS(E) with a CICS/VS or Shadow II online prompter	\$22,000 to \$28,000	653
TSI Int'l. (203) 853-2884	Data Analyzer	IBM mainframes	\$23,000 to \$38,000	654



You know that choosing the right software is serious business. So does WATCOM.

So before you make any decisions about your software needs, talk to WATCOM—the people major software users around the world have trusted for years. WATCOM has the products you need to get the job done right. Proven performers like WATFOR*, WATFIV*, WATBOL*, and SCRIPT. Plus new leaders in software for PC workstations and micro-to-mainframe communications. Networks, language interpreters and compilers. Text preparation and data management. All WATCOM products are human engineered to provide the optimum in people efficiency and productivity. And they're designed to run compatibly on IBM mainframes and PC's, Digital main-

frames and micros, and Commodore micros.

Whatever you need is backed up by WATCOM's innovative maintenance and support services. You'll be kept up to date with the latest in product enhancements and information. And our publications and seminars will help you get the most out of your software investment. WATCOM. Quality products. Professional service. And a reputation built on more than 150,000 licensed mainframe and micro software programs throughout the world. So talk to us before you decide. After all, choosing the right software is serious business. For you. And for WATCOM.

Make the right choice: WATFOR-77 from WATCOM

Optimizing programmer productivity makes WATFOR-77 the right choice.

WATFOR-77 significantly reduces the time required for program development by compiling and executing the program directly in the computer memory in one step. Together with excellent debugging and error diagnostics, WATFOR-77 optimizes programmer efficiency and overall productivity.

WATFOR-77 is the newest member of the WATFOR family of debugging FORTRAN compilers and is ideal in business,

educational, and scientific applications. Supporting the full FORTRAN 77 language, WATFOR-77 is now available for the IBM 370 VM/SP CMS*.

Make the right choice. Call or write WATCOM today and we'll tell you all about WATFOR-77 or any of WATCOM's other people-efficient products.

WATCOM
The right choice in software.

Yes! I want to make the right choice in software. Send me more information on: ☐ WATFOR-77 ☐ WATCOM Software Catalogue

Name: _____

Company: _____

Title: _____

Address: _____

City: _____ State: _____ Zip: _____

WATCOM PRODUCTS INC.

415 Phillip Street
Waterloo, Ontario, Canada
N2L 3X2

(519) 886-3700

Telex 06-955458

*WATFOR, WATFIV and WATBOL are registered trademarks of the University of Waterloo.

*IBM PC and IBM 370 VM/SP CMS are registered trademarks of International Business Machines Corporation.



The HP 3000 compu

However much you change, you're going to need both office automation *and* distributed data processing. Fortunately, one company gives you both in a single system.

Hewlett-Packard's HP 3000 is a fully compatible family of computers, ranging from a new system that handles as few as two users to a distributed mainframe that connects up to 400. You can run the same software right up the line.

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

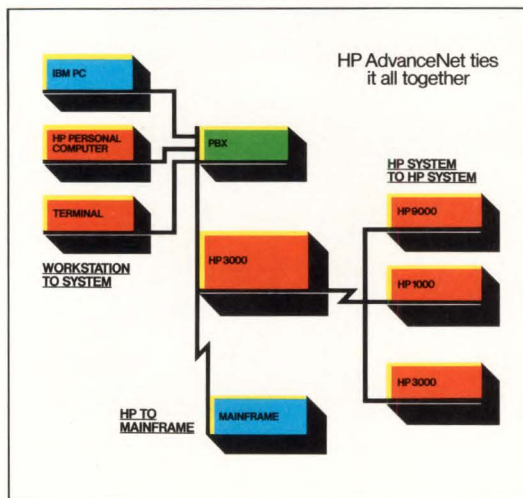
on conversion.

A small, but mighty, addition.

The new HP 3000 Series 37 Office Computer, the latest member of the family, puts the power of the HP 3000 within the reach of smaller budgets.

So now you can afford to give your branch offices and departments their own systems. And they'll still remain part of your overall DP picture with links to other systems.

In the office, the HP 3000 is the heart of our Personal Productivity Center. This integrates the information people need to get their jobs done more productively.





ter. One family fits all.

It provides an interface for a wide range of workstations, peripherals and personal computers, including our Touchscreen Personal Computer and The Portable, as well as IBM PCs. And it allows them to interact directly with the HP 3000. So your people won't have to learn DP commands.

You'll communicate better with HP AdvanceNet.

Our communications go well beyond this office network. With HP Advance Net, they extend to links with other HP 3000s, in the same building or on the other side of the world. And to your mainframe computers, ours or IBM's.

Currently, more than 10,000 HP 3000 systems are working in networks so effectively that our communications were voted #1 in a national survey.

A Datapro poll also rated our service

#1. So you get more than office automation and data processing in a single system. You get all the support you need from a single company.

For a demonstration of the single solution for both sides of your company, contact your local HP office listed in the white pages. Or write for complete information to Susan Curtis, Hewlett-Packard, Dept. 027203, 19055 Pruneridge Ave., Bldg. 46T, Cupertino, CA 95014.

In Europe, write Michael Zandwijken, Hewlett-Packard, Dept. 027203, P.O. 529, 1180 AM Amstelveen, The Netherlands.

We'll fit you no matter how much you change over the years.



**HEWLETT
PACKARD**

by John Seaman, Data Communications Editor



Photo by Dan McCoy/Black Star

WHAT'S IN STORE FOR THE IBM 3270 FAMILY?

The IBM 3270 information-display line of products has been around since 1972 and enjoys wide popularity. Although IBM has made a number of changes in the 3270 family's terminals and peripherals in the past 13 years, it has been careful not to make previously released equipment obsolete. To this end, it has left the 3274 cluster controller virtually intact, only adding an occasional enhancement to it. But the 3274 is fast becoming obsolete and soon will be replaced, according to several experts. Users will be wise to prepare themselves.

"The 3274 is creaking at the seams," says Anura Guruge, product marketing manager at Case Rixon Communications, the Silver Spring, MD-based data-communications vendor. Guruge, an ex-IBM employee who worked on the development of the 3274 controller during the 1970s, predicts Big Blue will replace the 3274 by the end of next year at the latest.

According to Chet Hopkins, communications manager at Electronic Data Systems, the Dallas-based division of General Motors Corp. (Detroit), IBM sales reps have hinted the 3274 will be replaced soon. "The 3274 is an old product," says Hopkins. "IBM has continued to build it up with enhancements, but there's a limit to how far the adaptation process can go."

What can users expect from the 3274's replacement? Robert Follett, regional vice president for the DMW Group, a consultancy headquartered in Ann Arbor, MI, predicts the new controller will allow peer-to-peer communications between personal computers connected via the controller, eliminating the need for communications to take place through the host mainframe. "IBM has to move network control away from the host to keep in line with what's been going on in the rest of the data-communications arena for years," he says. Follett also predicts the new controller will have a store-and-forward

feature that will eliminate the requirement that communications take place in real time. That requirement is a limitation, says Follett.

Case Rixon's Guruge points out that IBM's announced upgrading of the Type 2 node in its System Network Architecture (SNA) to a Type 2.1 node paves the way for several enhancements to the 3270 family's cluster controller, including the ability to allow peer-to-peer communications. Even though the 3274 controller is classified as a Type 2 node, Guruge predicts its replacement will be a Type 2.1 node. The Type 2.1 node upgrade, which IBM announced last November, will permit enhanced controllers to be hooked together. "A 3270 terminal attached to one controller could then communicate with another terminal attached to another controller without going through a mainframe host," Guruge notes. The Type 2.1 upgrade will also allow the new controller to sup-

(Continued on page 60)

Trade up to 2400 bps. Trade in your 212 for \$200 off Gandalf's new dial modem.

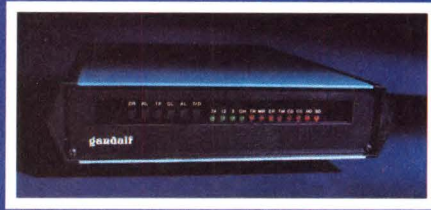
Upgrade to 2400 bps, full duplex, auto-dial, auto-answer performance at standard 1200 bps prices. And phase out your 212s at the same time.

As a special limited introductory offer, Gandalf will give you a \$200 rebate for your current 212 (or 3400 series modem) on a one-for-one basis when you purchase Gandalf's new Access Series SAM 24 dial modem.

The offer is extraordinary, and so is the modem!

The SAM 24 has Gandalf's proprietary advanced digital signal processing technology used in Gandalf's high-performance 9600 bps modem products. The result is a lower bit-error-rate at 2400 bps than a typical 212 at 1200 bps. But that's not all, there's even more performance packed into this new modem:

- Automatic speed matching at 2400, 1200 and 300 bps
- Sync or async operation



- Last number dialed recall
- Extensive diagnostics with local/remote loopbacks, plus test pattern generator
- Easy console set-up
- CCITT V.22 bis, Bell 212A and Bell 103 compatible

The Gandalf SAM 24 incorporates an integral auto-dialer to permit pulse or Touch Tone dialing using a computer or terminal keyboard.

The new Gandalf SAM 24 full-duplex modem is available right now in stand-alone (\$795 U.S. list, qty. one) and rackmount (\$725 U.S. list, qty. one) models.

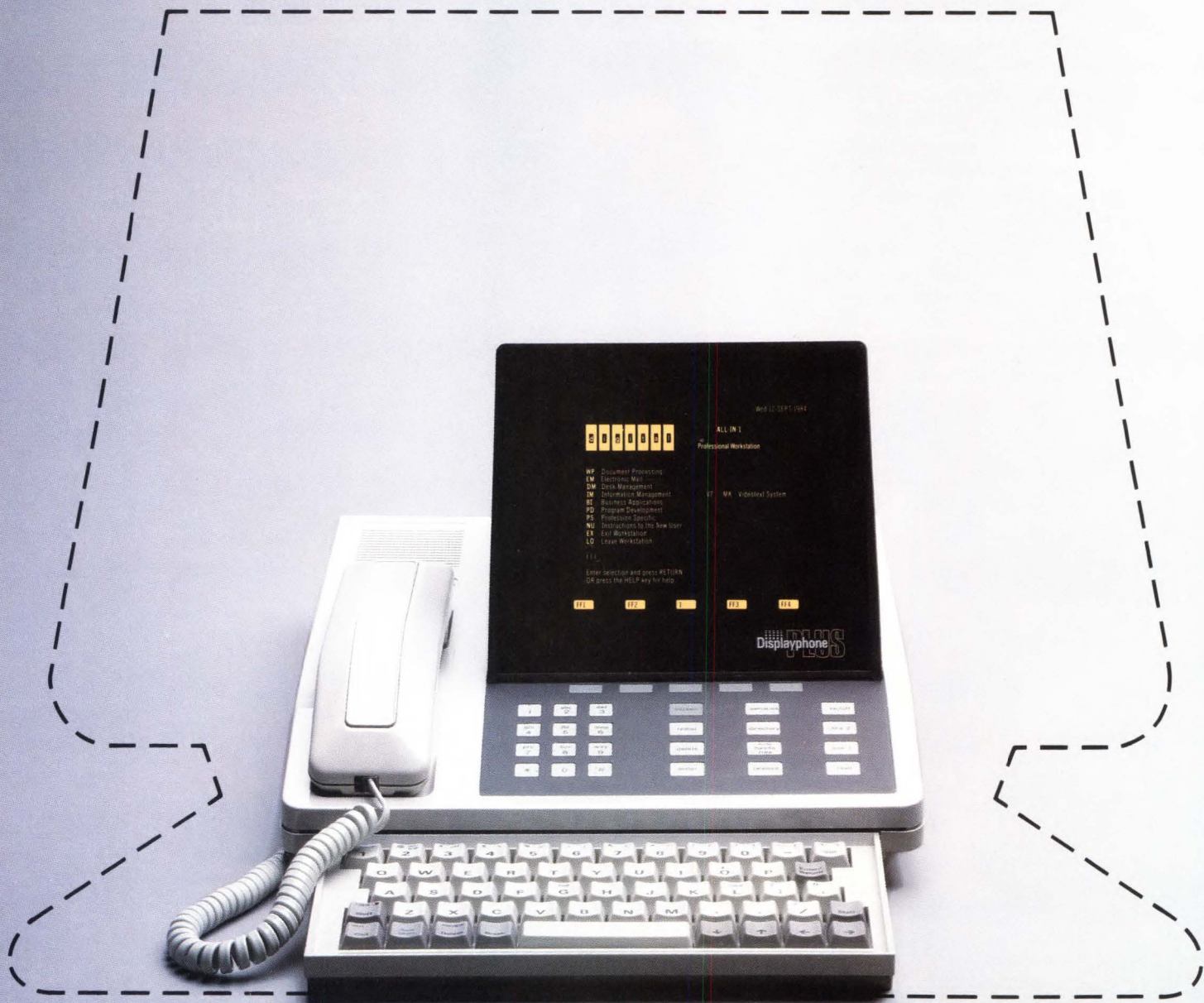
Act now! Get all the details from your Gandalf sales representative.

gandalf[®]

Canada (613) 226-6500
U.S.A. (312) 541-6060



Takes their without



The Displayphone-Plus Terminal

terminal's place the space.

It's important that the Displayphone-Plus* terminal can fit with an existing information management system, offering download emulation of virtually any cursor addressing conversational CRT and plug-and-play compatibility with the VT-100.

But what makes the Displayphone-Plus amazing is that it does it all while still fitting comfortably on a desk.

Inside the Displayphone-Plus terminal is a 212A compatible auto answer modem with selectable 300/1200 BPS transmission rates and full automatic log-on. So it can meet the needs of managers and other occasional data users, while emulating such terminals as the Digital Equipment Corporation

VT-100™ and VT-52™, ADDS Viewpoint®, Regent 25®, and many more.

On the outside is a full-stroke keyboard and easy-to-read amber screen which allows the Displayphone-Plus terminal to match the performance of large, conventional terminals. Its sophisticated telephone capabilities allow it to surpass them with a 90-number directory, automatic dialing, and handsfree speaking. And it's as easy as a telephone to use.

To find out more about the Displayphone-Plus terminal, call 1-800-328-8800, or write to Northern Telecom Inc., Advanced Communications Terminals Division, P.O. Box 202048, Dallas, TX 75220-9990.



(Continued from page 56)

port a hard disk, according to Guruge.

Guruge says he expects the 3274's replacement to have 64 ports, double the number of ports available on the 3274. He also predicts the new controller will offer a multiple-link feature. "Instead of having just one modem connection between two controllers, you'd have multiple connections, which would ensure continued communications during a line failure," he says.

Another important feature of the new controller will be image quality, says Guruge. The new controller will allow images resembling color photographs—annotated with text, if desired—to be brought up on 3270 terminal screens. To get such image quality, IBM will have to develop a new image terminal. Guruge predicts the new terminal will be based on IBM's 3290 terminal, an expensive gas-plasma device with a large, flat screen.

Guruge looks for the new controller to offer loop cabling, which is often employed in local-area networks. With loop cabling, users will no longer have to connect each terminal to its controller with a separate cable, greatly reducing coaxial cable requirements.

Guruge anticipates that the new controller will give 3270 terminals personal-computer capabilities. "Right now, the IBM PC AT can support up to three dumb terminals and make them emulate personal computers," he says. "Put that same capability in the replacement controller, and users will be able to employ up to 64 terminals as personal computers." On the other side of the coin, Guruge says, the new controller should also be able to let personal-computer users who need to emulate 3270 terminals to access mainframe applications achieve emulation without having to buy special add-ons or software, as is now the case.

The new controller will also have an interface to IBM's Distributed System Executive (DSX) software, Guruge predicts. DSX software, which runs on IBM mainframes, can distribute applications software on a controlled basis. "With a DSX interface, large-network users could generate most of their software initially at the central site, and

"The 3274 is creaking at the seams."

Guruge, Case Rixon

then download it to all the new controller," Guruge says. "This would be a simpler way to run an operation."

In general, Guruge sees the new controller as providing a stronger link between the 3270 system and IBM's office-automation schemes like its Distributed Office Support System (DISOSS). "Right now, the 3270 family doesn't have much of a link to DISOSS," Guruge notes. "But with improvements like built-in terminal emulation, hard-disk support, and peer-to-peer communications, the link between 3270 and DISOSS will become stronger," he says.

Although the replacement for the 3274 controller will probably offer users several key advantages over the 3274, the coming of a new controller carries with it a major question for users. Will the new controller make existing equipment in the 3270 family obsolete?

L. David Passmore, group manager of the network architectures and protocols division at Network Strategies Inc., a consultancy based in Burke, VA, believes users won't have to worry about 3270 equipment already in place. "The new controller will have to conform to SNA standards," Passmore points out.

But Guruge believes that at least one member of the 3270 family—the 3277 terminal—will not be supported by the new controller. As Guruge notes, the 3277 is the first-generation terminal for the 3270 system. Since 1976, the 3277 has been superseded by the 3278/3279, 3178/3179, and 3180 terminals. Because, in Guruge's estimation, IBM will probably add yet another terminal to the 3270 family to take advantage of improved image qualities, the 3277 is a likely candidate for obsolescence.

Although most existing terminals will not be made obsolete by the new controller, users probably won't be able to

take advantage of many of the new controller's features unless they invest in new terminal models, according to Robert T. Fertig, president of Enterprise Information Systems Inc., a consultancy based in Greenwich, CT. "The 3274's replacement will be a bridge that will allow users to gradually phase out older terminals while adding the more advanced terminals," Fertig predicts.

Of course, replacing existing controllers and terminals can be costly, and both Fertig and Guruge predict that users will have to pay more for the advanced features the new equipment will offer, particularly if they buy gas-plasma terminals. "Users won't be forced to replace most of their existing terminals unless they want the advanced functions, which is fair enough," says Guruge.

What plan of attack should users employ for the new controller and new terminals when IBM makes them available? "The only product users will have to buy initially is the replacement controller," predicts Guruge. "With the new controller, you may not have many benefits from the start, since most of the benefits will probably reside in the new terminals, but at least you'll get better performance from your existing equipment," he says. "Later, you can buy the new terminals with their added features as you need them, piece by piece."

Guruge says the older terminals will be far from obsolete for many users. "Users will always have applications that require simple terminals, without the new functions and features," he says. He also suggests that users who want to liquidate existing equipment will probably have little trouble doing so. "There are plenty of leasing organizations that would be interested in old equipment," he says.

Undoubtedly, the coming of a new 3270 controller and terminals will present users with a host of intriguing questions and problems. But, according to the experts, the questions and problems will not be unmanageable. Users who plan intelligently and have some idea of what to expect beforehand should have little difficulty in adapting to IBM's new product line. □

THE WORD IS OUT.



©1985 AT&T Information Systems.
IBM is a registered trademark of the International Business Machines Corp.

The word is AT&T Information Systems. We have a full line of multi-functional data terminals and printers. Business tools designed for peak performance over the long term.

Our asynchronous and synchronous workstations and printers are compatible with the AT&T 3B Computers—the computers with the future built in. And they're compatible with other leading computers.

These terminals are designed with people in mind, too. Features like non-glare, smudge-resistant tilt screens and intelligent integrated modems help reduce errors. AT&T terminals meet the needs

of all end users. And keep them working productively.

Our synchronous terminals are compact, modular and IBM* 3270 compatible. The E4540, for example, comes with a choice of displays, keyboards, controllers, printers and cabling methods.

We have asynchronous terminals that offer sophisticated graphics and windowing capabilities. And compatible printers that are among the most functional available.

AT&T led the communications revolution over 100 years ago. Today, designers at AT&T Information Systems Laboratories are developing new data products to meet

your company's needs now and in the future.

To learn why the last word in data terminals is AT&T, call 1-800-247-1212.

WHEN YOU'VE GOT TO BE RIGHT.



AT&T

Information Systems

FOLLOWING THE LEADERS

by Jordan Gold, Southwestern Editor



Rod Canion oversees Compaq's upward climb at the Houston plant.

COMPAQ'S LOVING LIFE ON THE EDGE

Six percent of the corporate-personal-computer market and third place in the race to become number one—if those sound like paltry numbers, look again at the vendor that produced them. Compaq Computer Corp., started only two years ago, has racked up an impressive record of growth. Compaq had revenues of \$111 million in its first year of operation and sales increased last year to \$329 million. Compaq's growth may be unprecedented, according to some observers.

Compaq's growth has continued apace despite the efforts of IBM to stunt it. Last July, and again in December, IBM cut the prices of its Personal Computer line. Big Blue also brought out a Portable PC designed to neutralize Compaq's bread-and-butter product, the Compaq Portable. IBM's moves, however, had a negligible effect on Houston-based Compaq. The Compaq Portable is outselling the Portable PC, fueling Compaq's moves into desk-top micros and tele-

communications workstations.

But Compaq's spectacular growth has a dark side. Can Compaq's management control it or will Compaq burn out like most meteoric startups? Otis Bradley, investment analyst at Alex Brown & Sons, New York, believes Compaq's management team is a key to the vendor's success. "Other startups may have a good entrepreneur, but they don't have proven managers. Compaq has tremendous depth of management. Compaq's key managers have been around for years at vendors like Texas Instruments and IBM."

However, Bradley has reservations about Compaq's fast growth. "The fact that Compaq has grown rapidly makes you wonder whether all aspects of the company have been pulled along in unison," he says. Rod Canion, president and CEO of Compaq, claims Compaq has taken steps to ensure its management team can handle high growth. (Compaq has more than 1,400 em-

ployees, up more than threefold from 1983.) Compaq's strategy has been to put top-level managers in charge of small departments, eliminating the need to constantly hire more experienced managers to keep up with growth. As a result, Compaq has had no turnover in top management. "Part of our success in controlling rapid growth is having stronger management than we need," Canion says.

Compaq also prepared for growth by reorganizing on at least two occasions, most recently, early this year. The office-computer, advanced-computer, and portable-computer divisions were combined into a personal-computer division. Compaq also formed corporate-operations and telecommunications divisions this year. The reorganization was necessary to give Compaq better focus says Canion. "Last year, our product-development divisions developed new products that will be on the market in 1985," Canion explains. "This will be a year of coordi-

A LONE THIEF WITH A COMPUTER TERMINAL CAN STEAL MORE MONEY THAN 49 BANK ROBBERS WITH GUNS.



By FBI estimate, the average take for today's computer thief is \$450,000. Compared to only \$9,000 for a bank robber.

So far, losses caused by computer crime have grown to \$3 billion a year. Most cases involve financial fraud or theft. But information theft, unauthorized use of services, and vandalism are also high on the list. And every day, more and more people are shaking hands with their first computer. How many will use their knowledge as a weapon?

Don't become another computer crime statistic.

Your best defense begins *before* you become a victim. And you can start planning it today with Racal-Milgo's free Data Security Fact Kit.

You'll get a convenient overview of the present and potential risks posed by computer crime. But more importantly, you'll learn how to counter the threat with Racal-Milgo's Datacryptor® series of encryption systems.

Let Datacryptor protect your computer communications.

Datacryptor completely alters transmitted data... rendering it useless to anyone but authorized personnel. You get reliable data security in virtually any communications environment—no matter what hardware or software is involved.

What's more, Datacryptor offers an option that lets you combine the protective features of two encryption techniques. With Datacryptor, you can have the speed and flexibility of DES-based encryption *and* the added security and convenience of the RSA technique of Public Key management. That's a level of protection offered by no other major supplier of data communications products.

Why wait to learn about computer crime the hard way? Send for your free Data Security Fact Kit today. Just call toll-free **1-800-327-4440**, Ext **1082**. In Florida, call **(305) 476-4812**, Ext **1082**.



Racal-Milgo®

P.O. Box 407044
Ft. Lauderdale, FL 33340-7044

RACAL

nation, making sure these products all fit together."

Compaq's first new product of this year is an executive workstation integrating a phone and a personal computer. It was developed by the telecommunications division and, once again, puts Compaq in competition with IBM. IBM's newly acquired subsidiary, Rolm Corp. (Santa Clara, CA) offers a copse of workstations that integrate telecommunications—the Cypress, the Cedar, and the Juniper.

Canion adds that Compaq will not introduce a product just to be in a certain market. "We conceived, designed, and built a prototype of a lap-top micro," Canion explains. "In tandem, we did market research—and we couldn't find a customer. We discovered that the amount of functionality sacrificed to achieve lap-top size is more than customers are willing to accept." Introduction of a lap-top computer would have been a mistake, concedes Canion, and Compaq can't afford mistakes. "We make a lot of little mistakes, and we have small and medium-sized problems, but the benefit of having a good management team is that mistakes are spotted before they get so big they can't be fixed."

And then there's IBM. Historically, IBM has rarely let compatible manufacturers survive for long, but Canion dismisses the evidence of history. "There's a fundamental difference between other compatible markets and the one we're in," Canion asserts. IBM's open-architecture strategy made the IBM a standard, but it also redefined the phrase *IBM compatibility*. "IBM is limited by its own standard; and IBM proved its commitment to the PC standard when it introduced the PC AT," says Canion. "We designed a high-quality product that is fully compatible with the [PC] standard and yet very different because it's portable," Canion says.

A key ingredient in the Compaq Portable's success is the way it is sold—almost exclusively in stores that also sell IBM PCs. "We could have chosen to go to the computer dealers who didn't carry the IBM PC," Canion says. "It seemed safe. But you either go in there and compete with IBM or you're

not going to be a competitor. Our competitors who went to the other stores have not fared nearly as well."

Since the introduction of the Compaq Portable, Compaq has released two other products, the Compaq Plus, an IBM PC XT-compatible portable machine that includes a built-in 10-megabyte hard disk, and the Compaq Deskpro, a line of four desk-top computers that use the 8086 microprocessor. The 8086 is faster than the 8088 used in Compaq portables and in the IBM PC and PC XT, but is still compatible enough to run virtually all IBM PC software.

Deskpro sales started slowly, largely as a result of the introduction of the PC AT, which is powered by the still-faster 80286 microprocessor. But, thanks to a shortage of PC ATs, Deskpro sales have increased and now represent 25 percent of all Compaq sales. Bradley, of Alex Brown & Sons, does not believe Deskpro sales will dry up when the PC AT becomes available in good supply. He believes IBM's supply problems have put Compaq in an enviable position. "The more time a product has in its market cycle, the more confidence dealers have that it works," he says. "The day the PC AT is available in large quantities, Compaq will counter with a price drop, improved performance, or a new model." Canion believes the Deskpro would have succeeded on its own merits anyway, because it's more compatible with the PC than is the PC AT.

Canion has visions of Compaq moving even higher than third place in market share. He sees the number-two spot in corporate-micro sales as a very real possibility. "If you look at the corporate-micro marketplace now, there are certain ways of cutting it so Compaq would show up as number two," he says. "We don't have any delusions of grandeur about overtaking IBM, at least not this decade, but ask me again in 10 years."

Compaq was ranked 90th in *Computer Decisions'* Top 100 in data processing for 1983, but it should move up strongly on 1984's list. Canion would like to ease Compaq into the Top 20 within the next two years and ultimately into the Top Five.

Compaq's growth has spiraled despite the efforts of IBM to stunt it.

It could be said that Compaq has arrived through a combination of luck and IBM's mistakes. After all, if IBM hadn't taken so long to introduce a portable, the Compaq Portable wouldn't even have been considered as a choice. But, IBM's dawdling gave Compaq enough time to build acceptance of its product. When IBM finally introduced its portable, the Compaq Portable was not only firmly entrenched in the micro marketplace, but was rated by many analysts as a better product than IBM's.

Canion is unimpressed by reports that IBM is about to announce a low-cost 80286-based micro. "IBM is always about to announce a fantastic product. After it's announced and understood, it's almost never nearly as good as expected," he says. Besides, if IBM does make an important 80286-based micro, Compaq will compete with its own offering, says Canion.

Despite Compaq's success, many analysts are skeptical about its future. "Compaq's biggest weakness is that it's a small vendor in a market dominated by IBM. It probably will be able to survive because it's a very strong vendor, but it will always be on the brink," asserts Esther Dyson, president of Edventure Holdings, a New York market-research firm.

Canion understands analysts' uneasiness about Compaq. He believes that as Compaq's profits increase (profits were only 3.9 percent of sales in 1984 and 2.5 percent in 1983), it will gain more believers in the industry-analyst community. Compaq's recent reorganization was only one part of the push to increase profitability, but Canion adds that profits were sacrificed to achieve growth. "We are not a quirk," he says. "We've done things right and built a very capable corporation. We believe those ingredients are also what will take us into the future." □

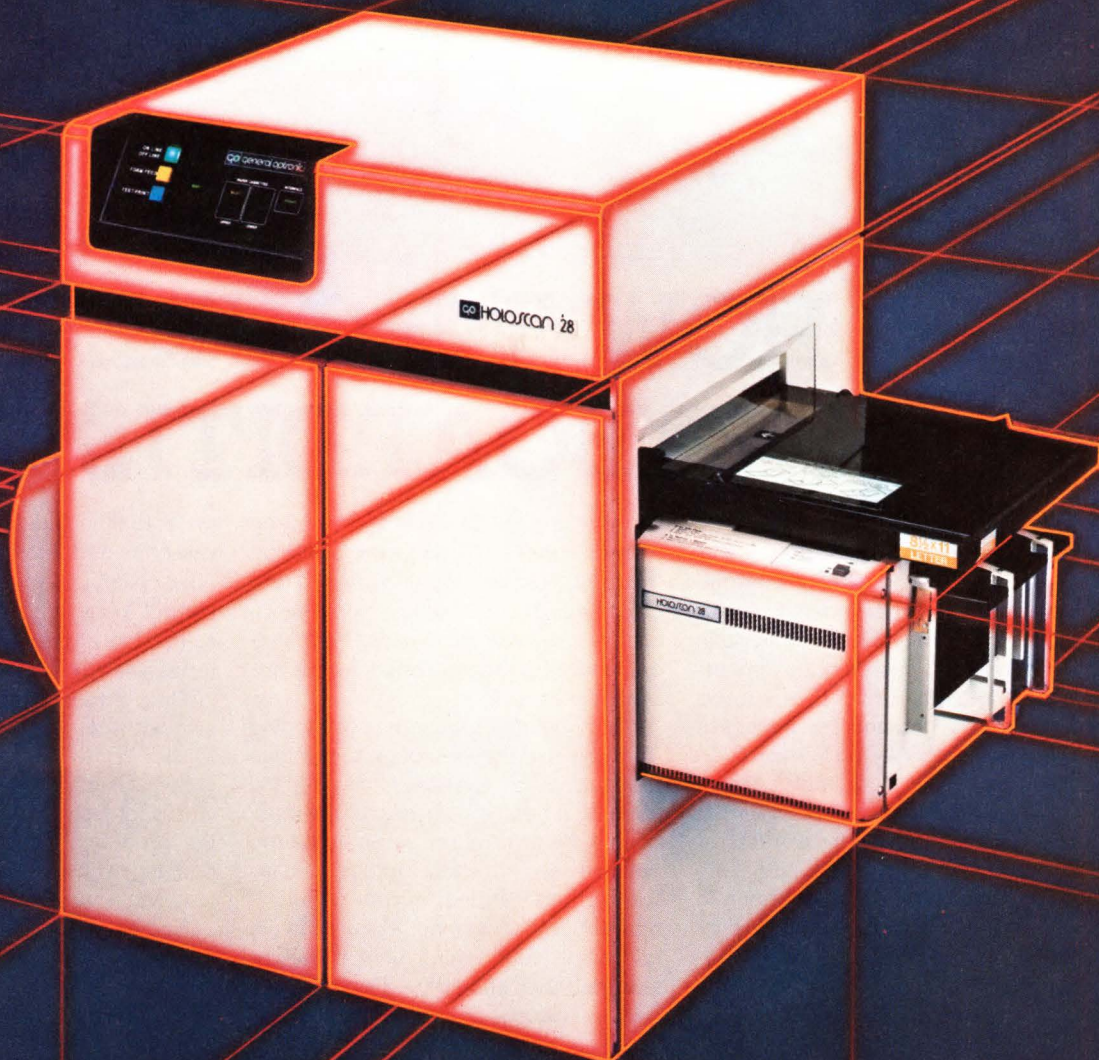
THE LEADER IN LASERS
PRESENTS THE
28-PAGE-PER MINUTE HOLOSCAN PRINTER.

It's the fastest low-cost laser printer — with true letter quality — in the industry. By incorporating the most sophisticated diode laser with holographic scanning capabilities, General Optronics created the versatile Holoscan 28™ Laser Printer. Just look at what it offers!

- high resolution — 300 by 300 dots per inch
- compatible with all computers
- ideal for multi-user applications
- nationwide service available
- prints on ordinary paper — 16 lb. to 26 lb.
- accepts mixed paper sizes — 8½" × 11" to 11" × 17"
- prints portrait or landscape
- merge forms and text
- prints multiple fonts on same page
- 1250 sheets input capacity
- compact and virtually silent
- single quantity price \$14,500 including video interface
- Centronics, Data Products and RS-232C interfaces available
- supports the Diablo 630 escape codes

For information, call or write Charles Kaplan, National Sales Manager, General Optronics Corp., Optical Information Products Division, Two Olsen Avenue, Edison, NJ 08820. 201-549-9000. TWX 710-997-9556. Distributor and OEM inquiries welcomed.

HOLOSCAN 28 LASER PRINTER



general optronics corp.

TRAINING

by David Roman, Associate Editor

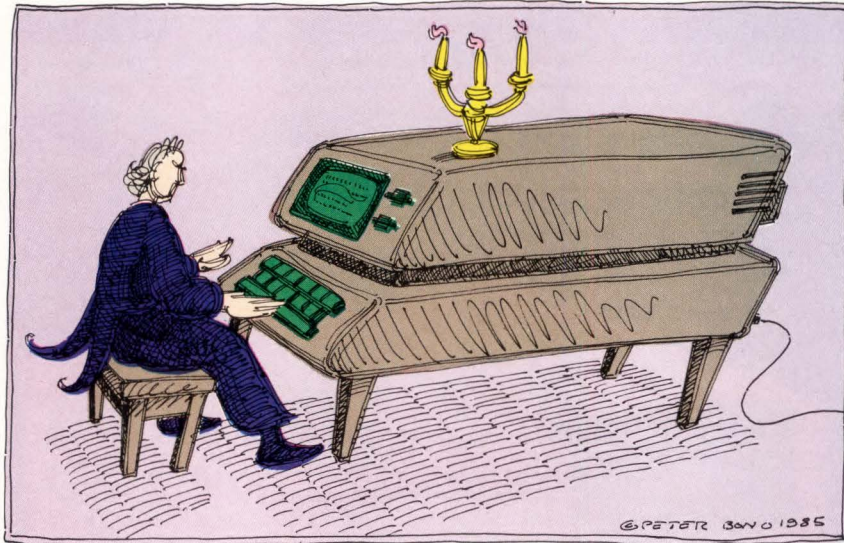


Illustration by Peter Bono

HOW TO CURE KEYBOARDITIS

Fancy alternatives like the mouse aside, typing is a prerequisite for anyone hoping to use a computer well, from the clerical on up to senior executives. Yet many users don't have good typing skills. Indeed, they may believe typing is beneath their status. "There's a big demand for keyboard training," suggests Norma Girouard, an instructor for New York-based American Express Co.'s Card Division in Plantation, FL. Many new workers at the Card Division lack the typing skills needed to use computers, according to Girouard. For this reason, keyboard instruction has become part of the six-week training program for every new employee at the Card Division.

Rather than make the risky assumption that your workers possess adequate typing skills or will manage well enough with their two-fingered hunt-and-peck methods, you can provide your organization's employees with structured training like that offered by American Express. A training program

can give you the confidence of knowing workers aren't wasting time scanning their keyboards searching for every other key. Almost a score of disk tutorials are available for personal computers, and a few stand-alone systems are available as well.

And what about your own typing skills? Even if they're not up to par, you may feel you're too busy to do anything about it. If you're like many of the managers Girouard trains, you may be too embarrassed to take typing classes with others during normal working hours. But you have no reason to avoid improving your typing skills if they're less than they should be. Disk tutorials train individuals, not groups, so you can use them at your desk or at home.

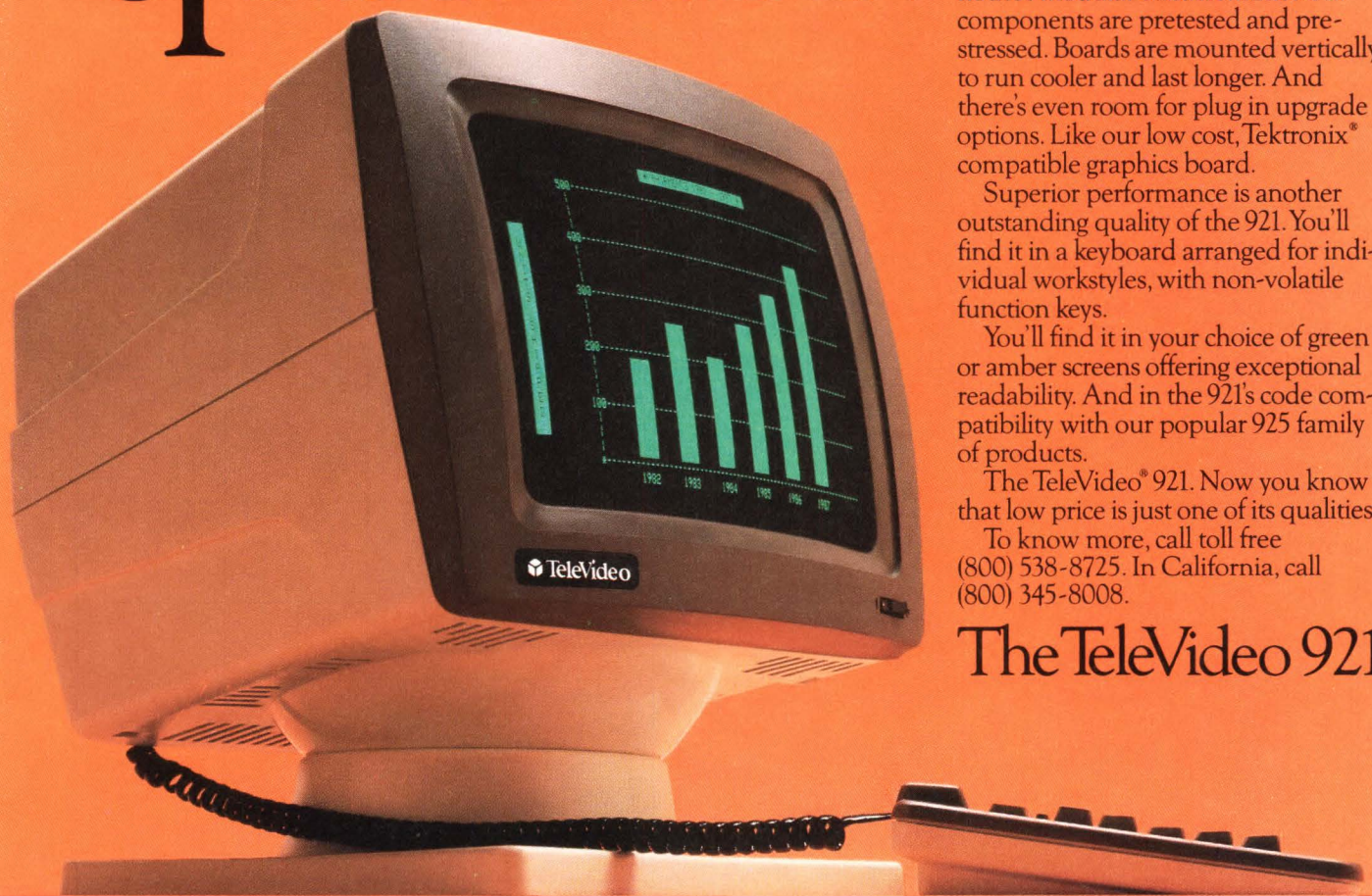
Stand-alone typing systems like Keytrainer from Keyboard Productivity Inc. (Marina Del Rey, CA) and Executive Keyboarding System 6/12 from TLC Learning Corp. (Huntington Station, NY) also offer individualized instruction. Keytrainer costs \$5,900, a

price that includes instructional audio cassettes and instructor training. Executive Keyboarding System 6/12, a control console that runs audio cassettes, has a base price of \$1,550, with tapes and manuals extra.

Disk tutorials vary widely in style and content. Scarborough Systems' Master Type is set up as an arcade game. Users type correct letters or words to destroy enemy bases. Most of the programs included on the accompanying list use a more straightforward teaching approach.

Some tutorials only teach three of the four rows of the standard "Qwerty" keyboard, but most teach the top row of numbers as well. Others teach the keyboard of a specific machine, such as the IBM Personal Computer, and so can cover specific function keys, or the group of keys clustered on the right-hand side of the PC's keyboard. Most tutorials advise the beginning typist on the proper way to sit and position the hands and arms. They also emphasize

The price is just one of its qualities.



The 921 is built to the highest quality standards in the industry — our own.

The efficient, contemporary case houses modular subassemblies. All components are pretested and pre-stressed. Boards are mounted vertically to run cooler and last longer. And there's even room for plug in upgrade options. Like our low cost, Tektronix® compatible graphics board.

Superior performance is another outstanding quality of the 921. You'll find it in a keyboard arranged for individual workstyles, with non-volatile function keys.

You'll find it in your choice of green or amber screens offering exceptional readability. And in the 921's code compatibility with our popular 925 family of products.

The TeleVideo® 921. Now you know that low price is just one of its qualities.

To know more, call toll free (800) 538-8725. In California, call (800) 345-8008.

The TeleVideo 921



Terminals
TeleVideo Systems, Inc.

Tektronix is a registered trademark of Tektronix, Inc.

TRAINING

the importance of practice. "If you don't practice," Girouard says, "you lose it."

Disk tutorials and stand-alone typing systems can provide the keyboarding

training computer users may need to do their jobs more effectively. As long as the keyboard is the computer's primary user interface, shortcut interfaces like the mouse popularized by Apple

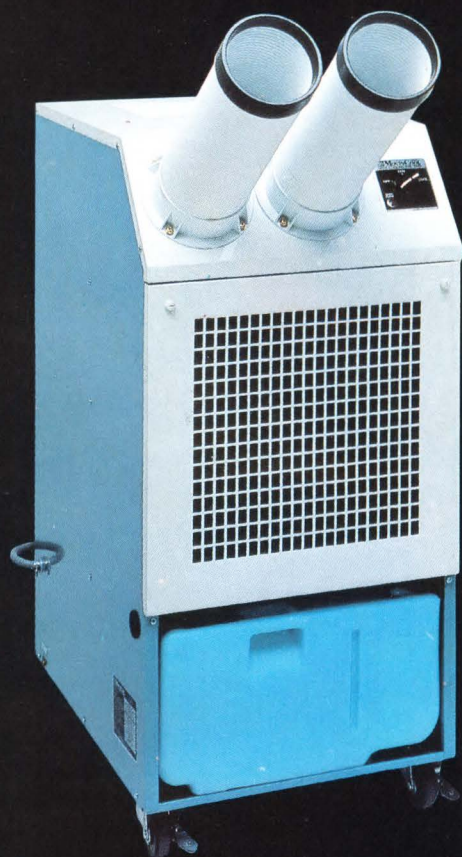
Computer Inc. (Cupertino, CA) or the touch-screen method endorsed by Hewlett-Packard Co. (Palo Alto, CA) will have minimal impact on the need for keyboard expertise. □

TYPING TUTORIALS

Vendor	Name	Description	Requirements	Price	Circle
Behavioral Engineering (408) 438-5649	Letter Man Typing Strategy	Game format Tutorial format with two practice games	IBM PC; Apple II, IIe Same systems	\$35 \$40	466
Compu-tations (313) 689-5059	Typing Teacher Keyboard Command	Tutorial format with basic keyboard instruction exercises Tutorial format with game component; teaches Apple keyboard	IBM PC; Apple II, II Plus Apple micros	\$20 \$35	467
Digital Mktg. (415) 947-1000	Hypertyper	Tutorial format; automatically calculates words per minute and percent accuracy	IBM PC; micros under CP/M or CP/M-86	\$30	468
Dynacomp (716) 671-6160	Typemaster	Tutorial format	TRS-80	\$15 to \$19	469
Excel Syst. (415) 381-4410	Protype	Tutorial format; teaches standard Qwerty keyboard, as well as 10-key numeric pad; Dvorak-keyboard version available	IBM PC	\$50	470
Individual Software (415) 341-6116	Typing Instructor	Tutorial format with game elements	IBM PC; TI PC; Wang PC	\$50	471
Keyboard Productivity (213) 827-7616	Accutouch	Tutorial format; teaches keyboard and numeric keypad	IBM PC; Apple IIe, Macintosh; Corona; Victor 9000; Wang PC	\$169	472
Micro-Art Programmers (805) 995-2329	Touchtyp	Tutorial format; teaches keyboard and control keys common to most micros	IBM PC; Kaypro II and 4; DEC Rainbow 100; micros under CP/M or MS-DOS	\$79	473
Microsoft (206) 828-8080	Typing Tutor II	Tutorial format; employs skills tests	Apple II	\$25	474
Newline Software (401) 624-3322	Touch Typist	Tutorial format; teaches alphanumeric keyboard, as well as keypad and editing keys; uses drill format	IBM PC; DECmate II and III, and DEC Rainbow under MS-DOS; Zenith Z100 or Z89	\$30 to \$79	475
Orange Microware (714) 639-8106	Type-Riter	Tutorial format	Micros under CP/M or MS-DOS	\$40	476
Portable Computer Support Grp. (214) 351-0564	Tutor Plus	Tutorial format with game component	TRS-80 Model 100	\$50	477
QED Information Sciences (617) 237-5656	Typing Made Easy	Tutorial format; teaches Qwerty keyboard; Dvorak-keyboard version available	IBM PC XT	\$60	478
Scarborough Syst. (914) 332-4545	Master Type	Game format; teaches Qwerty keyboard; Dvorak-keyboard version available	IBM PC; Apple II, II Plus, IIe, IIc, Macintosh	\$40	479
Simon & Schuster (212) 245-6400	Typing Tutor III	Combination game and tutorial format	IBM PC; Apple II series, Macintosh	\$40 to \$60	480
Simssoft (313) 984-1570	Type & Learn	Tutorial format	IBM PC	\$50	481

MOVINCOOL™

An Inexpensive Insurance Policy



Every week, in many locations across the country, computers crash . . . often due to air conditioning system failure. Even large computer rooms with back up systems are not immune to heat induced down time. Now however, there is MovinCool, a portable self contained unit that can be rolled in and running in just minutes. It concentrates its powerful stream of refrigerated air on critical hot spots, providing emergency cooling for as long as it is required.

And what of those smaller computer rooms with smaller heat loads and smaller budgets? Often, MovinCool can handle the entire cooling job, with unmatched reliability, at a cost considerably less than the other available alternatives.

Heat related computer crashes should become a thing of the past. Because now there is a sensible solution.

MOVINCOOL—The newest generation in air conditioning!

ND DENSO

NIPPONDENSO OF LOS ANGELES, INC.

3900 Via Oro Avenue, Long Beach, California 90810

TOLL FREE (800) 222-6352

TELEX: 371-9663

LAUGHTER GIVES YOU AN EDGE

*Your well-timed or spontaneous joke
can unmask absurd incongruities
or smooth frustrations in the office.*

by Martin Lasden, Western Editor

Question: How many programmers does it take to screw in a light bulb?

Answer: None. That's a hardware problem.

When we laugh, it is most often at the darker side of life—the failures, embarrassments, and impending disasters: events that would otherwise make us cry. As the German philosopher Friedrich Nietzsche observed: “Man alone suffers so excruciatingly in this world that he was compelled to invent laughter.”

In the world of MIS/dp, a world replete with tales of doom, gloom, and despair—of downed computers, distressed users, and cost overruns—humor can definitely play a positive role. As a recent *Computer Decisions* survey of MIS/dp executives dramatically demonstrates, the value of humor is widely recognized. Of the 105 executives who responded to the survey con-

ducted last January, all but three indicated that having a good sense of humor was either “important” or “very important” to their jobs. “If I didn’t have a good sense of humor, I’d go nuts,” was a refrain that echoed throughout the replies.

Although the need for mirth would seem to be obvious, executives are quick to admit that when they circulate among unsmiling programmers and resentful peers, humor is a rare commodity. So rare, in fact, that the stress of MIS/dp management can sometimes seem overwhelming.

Of course, in the heat of crisis, no one expects—or wants—you to be constantly aglow with good cheer. But every crisis, large or small, has a beginning, middle, and end that need to be put into perspective. Intelligence, foresight, and resolve will help you to realistically assess crises and lesser problems. But, to that list must be added the

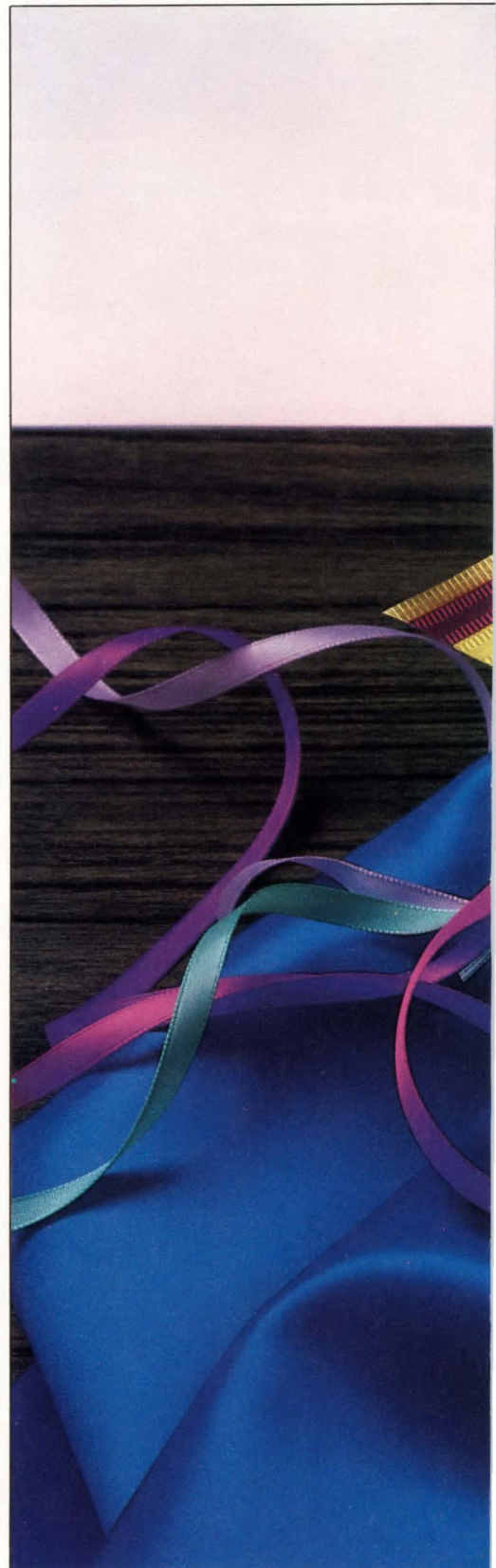


Photo by Bob Ward



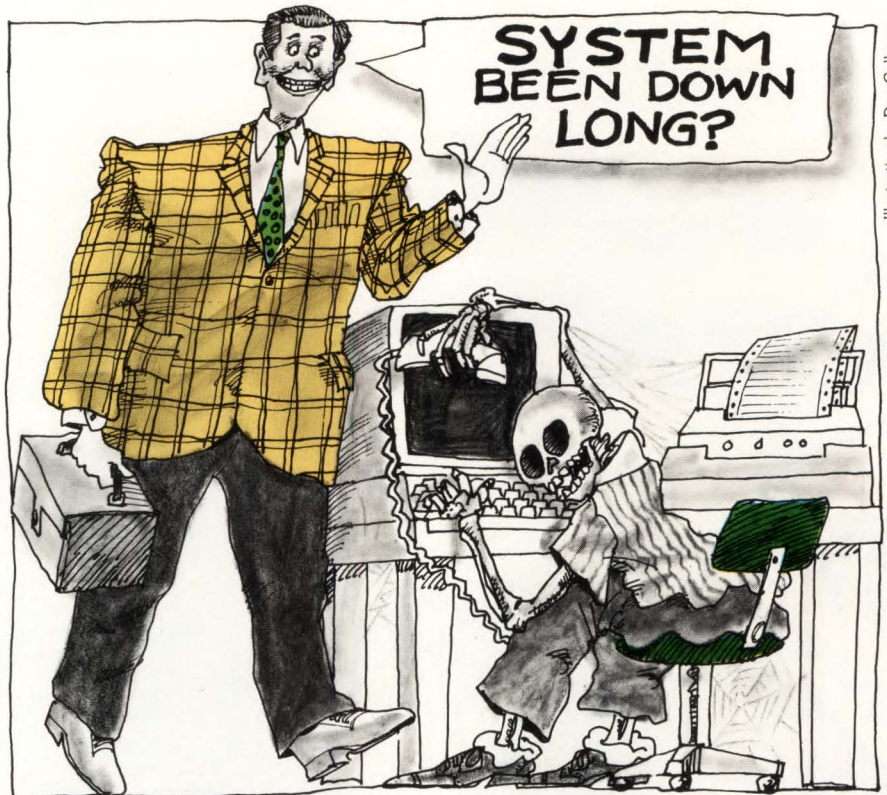
OFFICE HUMOR

powers of wit and humor.

"Humor rescued us," declares David K. Hurst, who, as an executive vice president at Russelsteel Inc., Toronto, witnessed some grim times when the survival of his company was threatened several years ago. Hurst's account of that crisis and how he dealt with it points to the benefits of humor. "Laughter helps people escape from their emotional cages or rigid beliefs," he says. "For the past three years, we've laughed a lot. Although much of the humor has inevitably been of the gallows variety, it has been an important ingredient in releasing tension and building trust."

The touted benefits of humor notwithstanding, clowning around has its hazards, especially in the office. If you play the jester, you risk putting subordinates on the defensive and giving users the impression that you're not taking them or their problems seriously. Worse yet, you risk offending your boss. Humor in the office is definitely on the decline, says Richard J. Cronin, whose executive-search firm, Hodge-Cronin & Assoc., Rosemont, IL, has conducted surveys on the subject over the last few years. Among the findings:

- The rising number of minority and female executives has inhibited the use of humor in business because of the greatly increased fear of offending someone.



"System been down long?" is an example of the gallows humor that personifies the frustrations rampant in MIS/dp shops.

- In spite of a universal preference for executives with well-developed senses of humor, the use of humor in business has declined during the last 10 years in favor of a stern, no-nonsense approach to business.
- A majority of corporate CEOs and deans of graduate schools of business

believe a sense of humor is essential to success, but business schools largely ignore humor in MBA curriculums.

The Hodge-Cronin surveys suggest tremendous ambivalence in the way humor is perceived in corporate America. On the one hand, it is valued as a boon to both corporate success and personal peace of mind; on the other, it is depreciated as much too risky in business. How can this conflict be resolved? For all those who would dare indulge themselves with an on-the-job chuckle or two, it's a question that bears looking into.

How do you know which computer terminal the _____ (insert ethnic group) has been working at?

Answer: It's the terminal with the white-out all over the screen.

Temple University (Philadelphia) psychologist David Baum believes trust is what distinguishes destructive humor from benevolent humor. Baum's studies of the ways managers use humor suggest that the same remark told by two different managers can have dramatically different results. Without

(Continued on page 76)

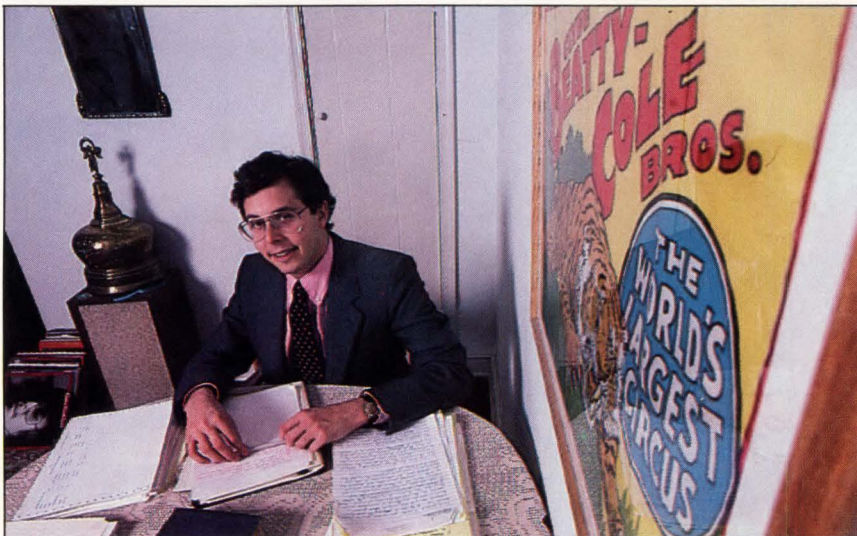


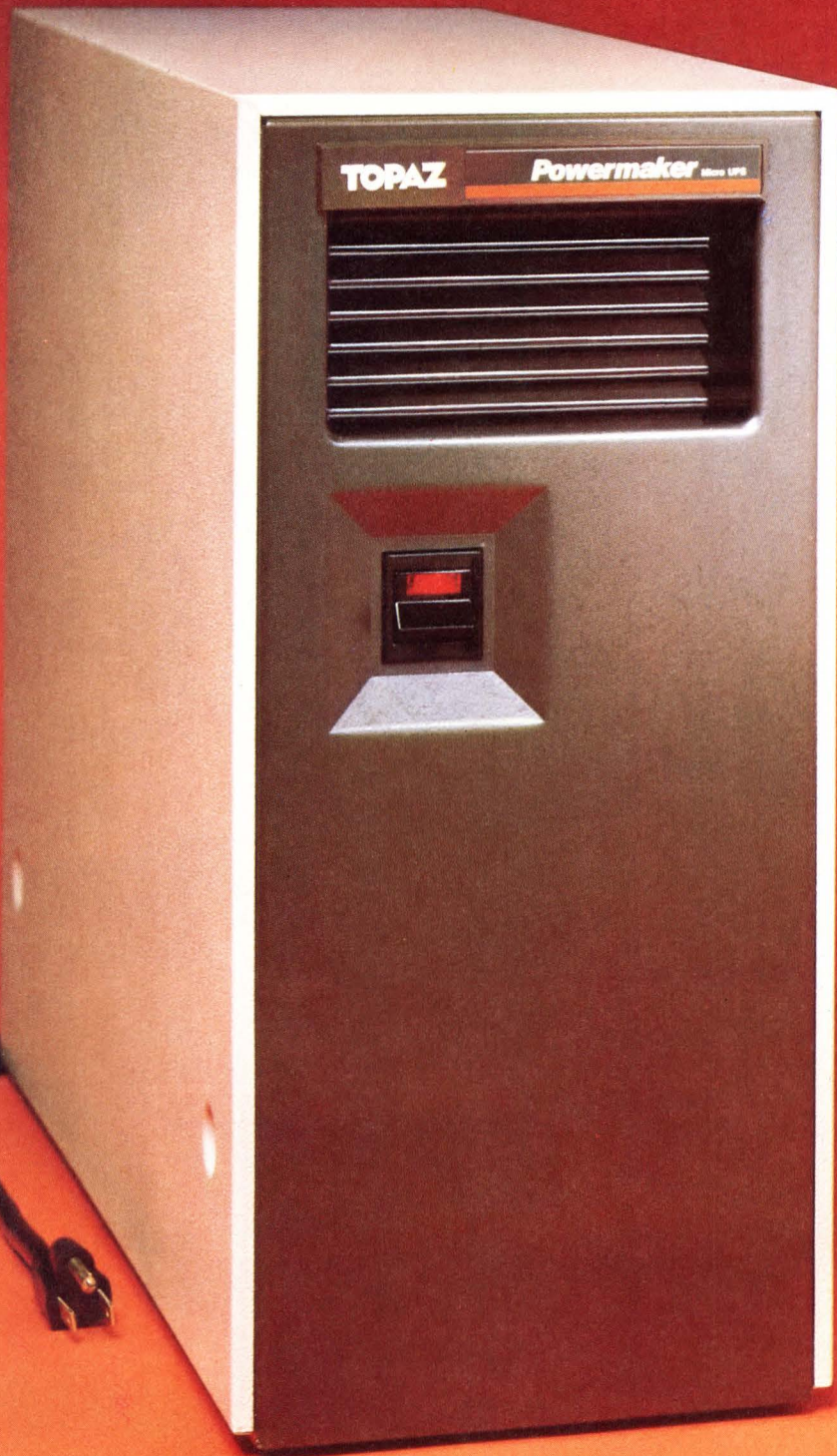
Photo by Sal DiMarco Jr.

David Baum, a psychologist at Temple University in Philadelphia, cites the element of trust between teller and listener as a factor that determines whether or not a joke will be perceived as funny.

Only from Topaz...

Powermaker[®] Micro UPS

**Uninterruptible, computer-grade power
—at half the cost**



It's in a class by itself.

For about half the cost of other Uninterruptible Power Systems, you can now get the same degree of protection with our Powermaker Micro UPS. This remarkable new system eliminates computer problems caused by blackouts, brownouts, voltage sags and power-line noise.

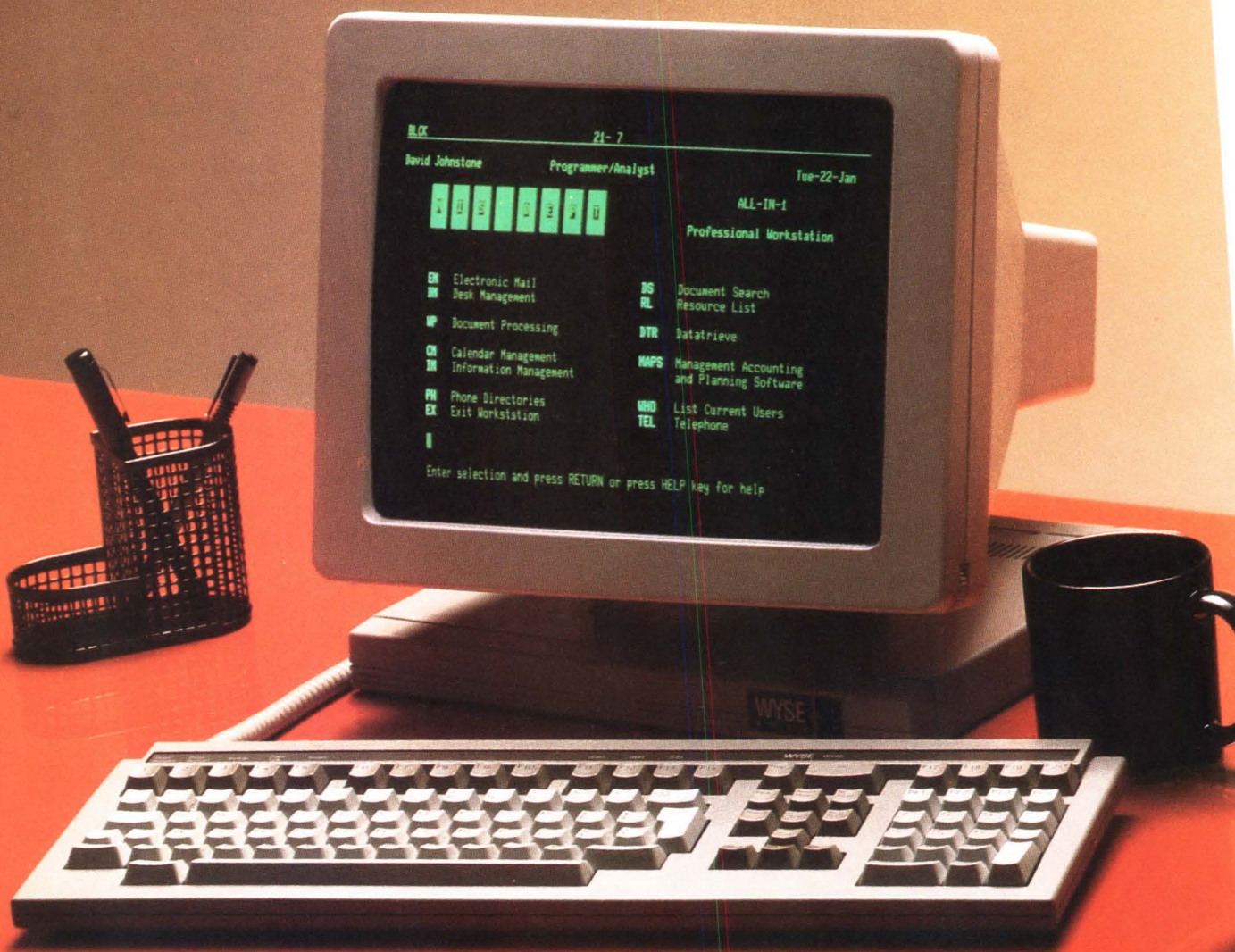
Providing up to 75 minutes of continuous computer-grade power, our Powermaker Micro UPS is compatible with microcomputers and PC's. It's fully automatic, maintenance-free, portable and compact. It fits neatly alongside or under your desk or workstation. And because you can't always tell when you've lost primary power, our little UPS even features an audible line-loss alarm.

But best of all is the price. The Powermaker Micro UPS is priced right and is ready for immediate shipment. Find out more about our Powermaker Micro UPS. Call us at (619) 279-0831, or contact your local Square D distributor.

TOPAZ[®]
Excellence in Computer Power

SQUARE D COMPANY

Now for \$799, a VT-220 with perfect function,



compatible terminal fit and form.

Our WY-85 gives you complete DEC VT-220™ software compatibility in function and fit, plus a form that beats all, for a price that beats all.

Like all our terminals, the WY-85 packs all the ergonomic features you want into an unusually small footprint. The generous 14" non-glare screen tilts, swivels, and handles a full 132-column format. Even the sculpted, low-profile keyboard adjusts for perfect fit and easier function.

So you get not just emulation, but the full operational compatibility you're looking for, including keyboard layout. For a lot less money, in a lot less space, with a lot more style.

No wonder Wyse terminals are now on more than 150,000 desktops worldwide.

For more information about our full line of computer display products, call the regional office nearest you.

WYSE
| | | |

Regional Offices:

Northeast (201) 725-5054

Southeast (305) 862-2221

Midwest (313) 471-1565

Southwest (818) 340-2013

Northwest (408) 559-5911



Photo by James Mason

Malcolm Kushner, San Francisco-based humor consultant, says the acronyms and computer mystique of the high-tech fields provide ample opportunities for humor.

(Continued from page 72)

trust, the most innocent remark might provoke fierce resentment; with trust, the most risqué quip may not only be accepted, but actually welcomed.

In companies that are rapidly expanding, managers will have to be especially cautious. Generally, new employees do not know each other and will not feel the same degree of comfort that may otherwise make aggressive humor seem funny. Where minorities and women are concerned, the ramifications can be especially serious. If an ethnic or sexist joke is told without trust or familiarity between two people, the joke is likely to blow up in the teller's face.

Even if trust exists, sensitivity to personal circumstances is important. "When I was going through my divorce, I found nothing funny in it at all," says Jack Hoffman, human-resources director at Subaru of America, Pennsauken, NJ. "It was too painful, and I needed to get through the pain before I could laugh at it." It was through the pain of his divorce that Hoffman came to appreciate something very basic about humor: its variability. When a person is suffering—whether from the pain of a divorce or from perceived discrimination—jokes aimed at that hurt are not likely to be appreciated. In fact, they're liable to cause deep resentment. And

yet, when the pain ebbs and the wound heals, the same joke may seem hilarious.

The fact that the same jokes prompt

widely differing responses, depending on the time and place in which they're told, suggests a fundamental question: What is the essence of humor? Theories abound, but perhaps the most provocative was presented some 18 years ago in Desmond Morris' book, *The Naked Ape* (McGraw-Hill, 1967). Observing the way laughter evolves in infants, Morris argued that humor is our fears rendered absurd.

"As an infant becomes imprinted on [attached to] the mother," Morris wrote, "the infant may find itself placed in a strange conflict. If the mother does something that startles it, she gives it two sets of opposing signals. One set says 'I am your mother—your personal protector; there is nothing to fear,' and the other set says, 'Look out, there's something frightening here.' The outcome of this is that the infant gives a response that is half a crying reaction and half a parental-recognition gurgle. The magic combination produces a laugh. So the laugh says, 'I rec-

(Continued on page 80)

A HUMOROUS CURE

Keeping your humor under adverse conditions is more than just a matter of perspective. It's also a matter of good health.

Since the 19th century, humor has been credited with any number of health benefits, including the stabilization of blood pressure, the "massaging" of vital organs, the oxygenation of blood, the stimulation of the circulation, and the facilitation of digestion. In more recent times, laughter has been touted as a possible cure for life-threatening disease—a claim that made Norman Cousins, for one, quite famous. In 1964, the former editor of the *Saturday Review* contracted a serious degenerative disease of the connective tissue in his spine and joints. The pain was intense, and the prognosis was poor.

Rather than accept a grim fate, Cousins checked out of the hospital and into a hotel room, where he put himself on a steady diet of humor books and "Candid Camera" TV

shows. By laughing it up, Cousins reports, his condition improved dramatically over the next few weeks. Upon examination, his doctors discovered that the connective tissue in his joints was regenerating. Since then, Cousins' condition has reversed itself.

"The person with a sense of humor is not just more relaxed in the face of potentially stressful situations, but is more flexible in his approach to any situation," writes philosophy professor John Moreall in his book, *Taking Humor Seriously* (State University of New York Press, 1983). "Even when there is not a lot going on in his environment, his imagination and innovativeness will keep him out of a rut, will prevent boredom and depression. He will, in short, have greater internal resources for being happy than the person who lacks a sense of humor; and this is likely to manifest itself in greater physical well-being."

You've got a minicomputer. Get a MiniRack II, too.



Even a minicomputer can turn out a mountain of printout. That can be a problem.

The answer? MiniRack II by Wilson Jones.

It's a complete printout storage and retrieval system, including suspension rack and four genuine pressboard binders. For one low price that makes MiniRack II one of the least expensive, most versatile systems you can buy.

MiniRack II holds up to 3600, 14 $\frac{7}{8}$ " x 11" printout sheets. And the printout binders come in four colors — perfect for color coding.

With MiniRack II, you can remove the binders from the top. Or with the optional T-Bar suspension system, you can remove them from the sides.

MiniRack II rolls under desks. Moves easily from desk to desk, department to department. Or sit it on a desktop, counter or credenza by removing the pop-on wheels.

Over the past twenty years, Wilson Jones has introduced 900 printout storage and retrieval products. All are work-efficient. All are cost-efficient.

And now the MiniRack II.

Take two.

Wilson Jones.
Computer
Furniture

Mail this coupon to Wilson Jones, 6150 Touhy Avenue, Dept. C-5, Chicago, IL 60648 or call toll-free:

1-800-323-2921

(In Ill.: 1-800-942-2568)

Please send me more information on the MiniRack II.

Name/Title _____

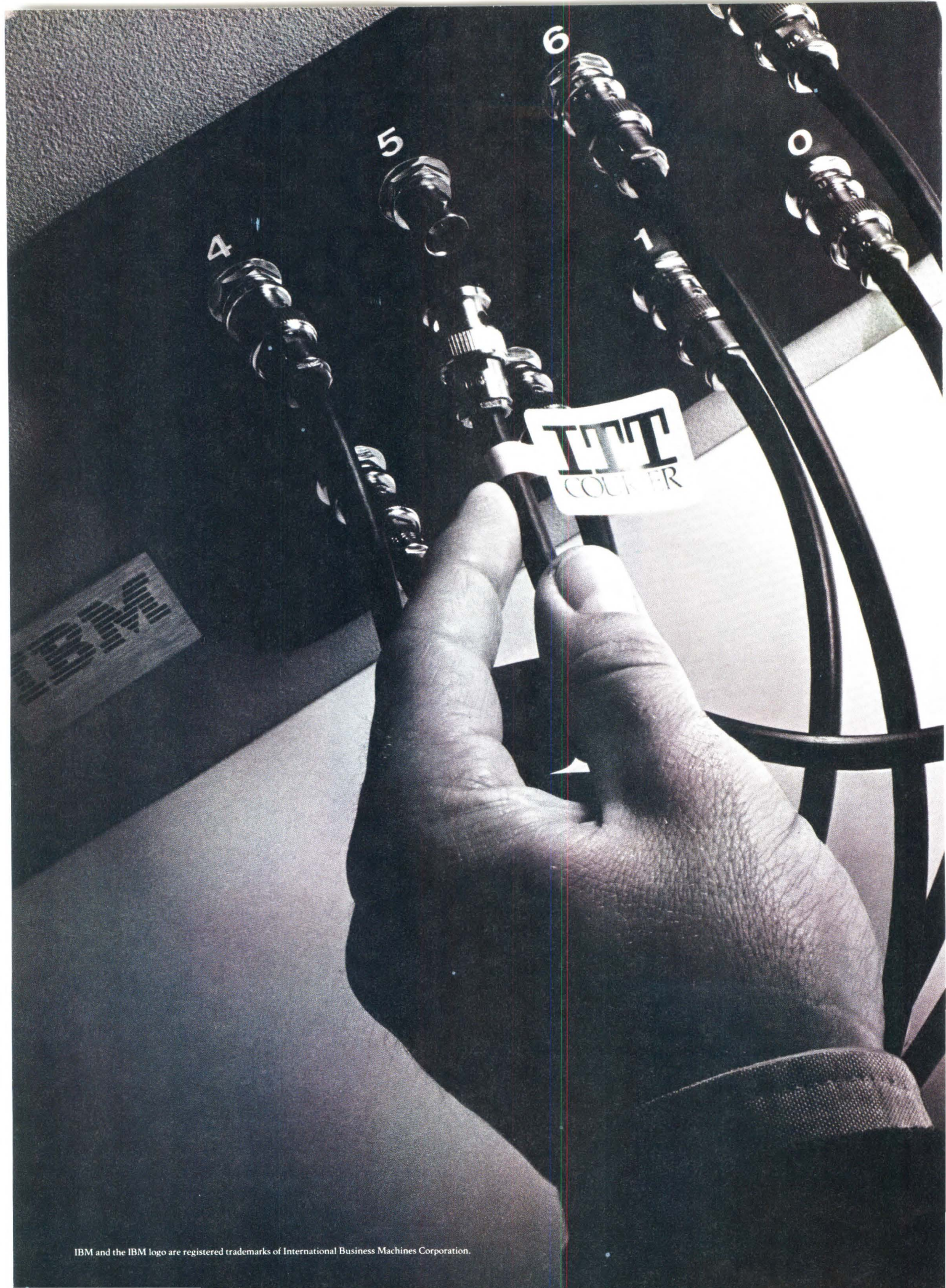
Company _____

Address _____

City _____ State _____ Zip _____

Phone _____

©1980 Wilson Jones Company



A SMALL CONCESSION TO THE COMPETITION.

Much as we hate to admit it, our big blue competition has more 3270 controllers out there than we do.

Trouble is, that makes it tough to reap the benefits of our popular, 12-inch compact display.

So we're introducing a new 1778 compact that plugs right into your 3274 or 3276 controller.

Like our original 1700, the 1778 fits in places an ordinary display won't. And it comes with ergonomic features the competition forgot. A tilt/swivel screen in your choice of amber or green. Blinking fields. Variable field underline. And an optional lightpen.

All in all, this means our small concession to the competition just might be a giant leap for productivity.

And, come to think of it, isn't that what this business is all about?

For more information, contact your nearest ITT Representative. Or call the ITT Courier Sales Support Dept., toll-free at 1-800-528-1400.

ITT
COURIER



The new plug-compatible ITT 1778 is 24% smaller than their 3178.

OFFICE HUMOR

(Continued from page 76)

ognize that the danger is not real.' "

Morris' theory offers two answers to the question of when and why someone will not laugh at your jokes. Either the stimulus you present is not strong enough to elicit the required relief, Morris would say, or the stimulus is so strong that no relief is possible. From Morris' thesis, another distinction can be drawn—the difference between laughing *at* and laughing *with* someone else. In the latter case, there is the sharing of a common frame of mind; in the former, your laughter is saying that your target is not only "frighteningly odd," but also "not worth taking seriously."

Your humorous targets may be any number of situations or people in the office: a quirk in a system, an eccentric colleague, or an erratic boss, to name a few. Janice Mace, a systems and programming manager for the city of Anaheim, CA, makes no bones about the fact that on one of her first jobs with another organization many years ago, she used to laugh a lot at her boss, who she believed was incompetent. It was all done behind his back, she assures. She needed to do it to maintain her morale, says Mace. She and a colleague started what came to be called "The Book," a collection of captions and cartoons meant to illustrate the absurdity of working for a boss who is unwilling or unable to manage.

Mace recalls an incident: "One day smoke started coming out of one of our printers. Instead of doing something about it, the boss looked at his watch and said that he had to go to lunch. Sometime later, The Book acquired a picture of a gorilla with a clock in the background that read 12 noon. The caption we wrote was: 'I don't care if the computer is on fire. It's 12 noon and I've got to go to lunch.' "

Such comic relief helped Mace to diffuse frustrations and stay with the job as long as she did, long enough to see the boss fired and herself put in his place. "The Book still exists," Mace adds. "My friend and I have shared custody of it. But I suppose if you were to look at it, you wouldn't understand why we think our book is so funny."

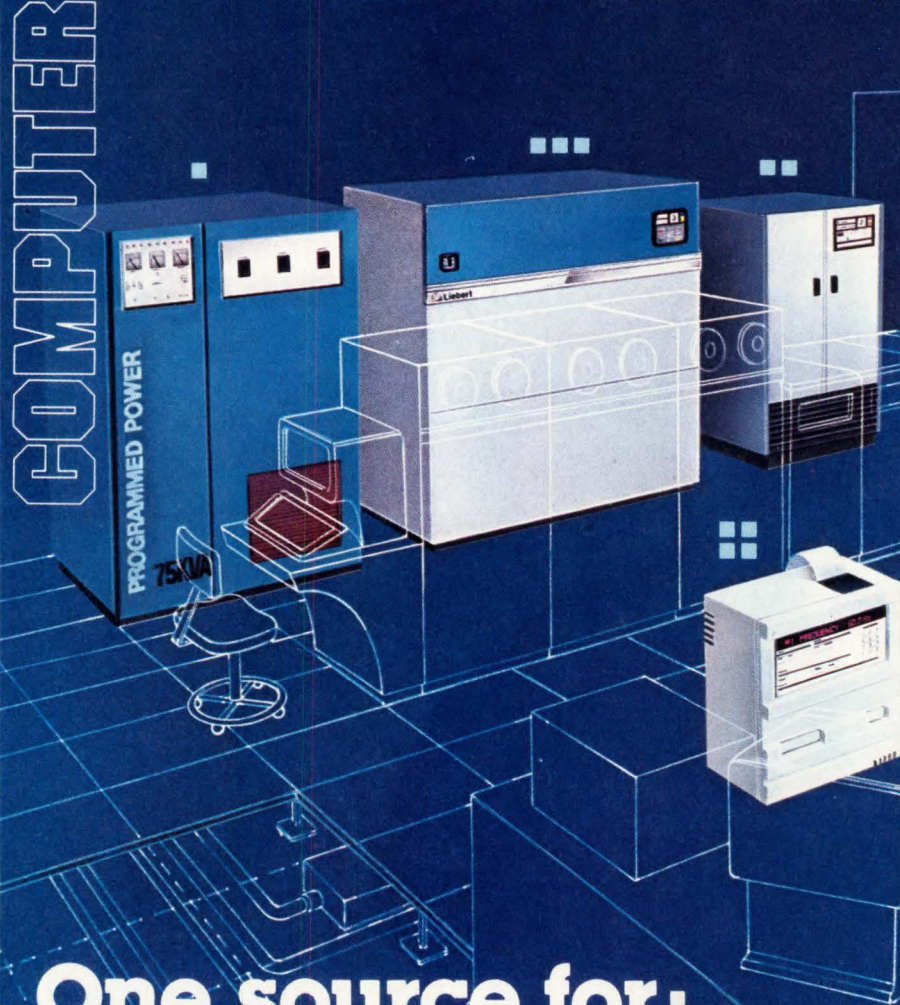
A doctor, an engineer, and a dp di-

rector are at a bar arguing over whose profession is the oldest. The doctor says: "Mine is the oldest profession," pointing out that God used Adam's rib to create Eve. The engineer says: "Mine is the oldest profession," pointing out that in the beginning God created heaven and earth from chaos. The dp director turns

to both of them with a proud smile and says: "Who do you think created all that chaos?"

Humor can divide and distance people from each other, but it can also bring them together. In fact, humor is known in the language of sociologists as a "social lubricant."

SUPPORT SYSTEMS



One source for:
Precise environmental control...
Power protection selection...
Full System surveillance...

 **Liebert**

CIRCLE 39

OFFICE HUMOR

"One user still giggles over the way I explained to him what a 'batch over-run' was when he needed critical year-end reports in a hurry," relates one MIS/dp manager at a midwestern insurance carrier. "I told him that it was like trying to fit 10 gallons of manure into a five-gallon bucket."

Another dp manager, this one from a midwestern city government, talks about the time that his organization's mainframe could not be accessed via terminals because the communication lines got wet. For two days no work could be done. "I told the users that if they wanted to get any work done,

they would have to bring in their blow dryers. At least that gag stopped them from screaming at me for a few hours," he recalls.

No doubt about it, at a critical moment when tempers are hot and nerves are frayed, a well-timed quip or joke can make all the difference in the world. Of course, there are risks. The boss may think you are disrespectful. Worse, a user may believe you aren't taking his or her problems seriously. Of course, knowing your audience is everything.

Twice, Alan J. Cecil, a programming manager at Owensboro (KY) National Bank, has tried to be funny in the office. His first attempt worked well; the second, not so well. The first time it went like this: "Our bank president," says Cecil, "called me to his office and informed me that his accounting reports had been late for a week. He was sick and tired of it and demanded to know why. I replied: 'Well at least we're consistent.' He chuckled, then calmly asked me to please get things straightened out."

The other attempt was not so successful. "My boss ran a job wrong," Cecil says, "so I started to tease him about it. I said: 'Gee, isn't it terrible that we can't get good help anymore.' He must have been in a bad mood because he proceeded to chew me out for my lack of respect for superiors. He told me to wear black to my annual review the next day."

The moral of these two stories: If you have to make fun of somebody to elicit a laugh, it's much safer to make fun of yourself.

One of the strangest tales of a back-fired joke is told by D.L. Domanick, associate director of information systems at the United Way Services in Cleveland. When punch cards were in wide use, an operator had asked Domanick what he should do with a freshly generated stack. "Percolate them," Domanick told him. Actually, in connection with computer punch cards, there is no such expression as percolate. Domanick was trying to be funny. However, later that day, when he asked that same operator whether he had run the cards through the computer, the opera-

(Continued on page 144)

BY LIEBERT

The computer life support systems that keep **computer availability** at its optimum level are all available from the industry leader!

The two best Power Protection systems:

- **The Programmed Power Center™** for uninterruptible power ... and
- **The Power Management Center™** with patented Datawave® technology for unmatched cost efficiency.
- **Environmental Control Systems.** Liebert sets the standard for precise control of computer room temperature, humidity and air cleanliness!
- **Support System Surveillance** with Liebert Sitemaster™, a versatile, microprocessor-based monitoring and control system that provides constant surveillance of all key support functions.



Liebert

World leader in computer support systems

Liebert Corporation, 1050 Dearborn Drive,
P.O. Box 29186, Columbus, Ohio 43229,
Phone 614-888-0246 Telex 246655 LIEBERT WOGN

Please send your free booklet on "Data Center Design"

Name _____

Title _____

Company _____

Address _____

City _____ State _____ Zip _____

☐ Have salesman call. Phone: _____ CD2125



IBM'S GRAND DESIGN

Ten years after its debut, IBM's SNA has become the foundation of ever-wider information grids.

by Robert A. Moskowitz

Picture the perfect system for connecting high-speed mainframes to one another and to a variety of terminals located nationwide or even worldwide. Communications between terminals, mainframes, and applications are smooth, fast, and seamless. The network accommodates all hardware, regardless of manufacturer.

Of course, the perfect network does not yet exist. But if and when the perfect data-communications network does evolve, chances are it will be based on System Network Architecture (SNA), IBM's grand design for data networks. When it was first introduced by IBM about 10 years ago, SNA was little more than a set of rules for fairly simple communications between host mainframes and dumb terminals. But IBM has steadily embellished the SNA framework with sophisticated features, making SNA the architecture of choice for wide-area networks.

In its effort to make SNA the *only* network architecture users will ever need, Big Blue has adopted a cooperative stance toward competing hardware vendors, encouraging them to adopt SNA standards. Fearful of falling off IBM's bandwagon, competitors are making sure their hardware is compatible with SNA. As a result, users of non-SNA

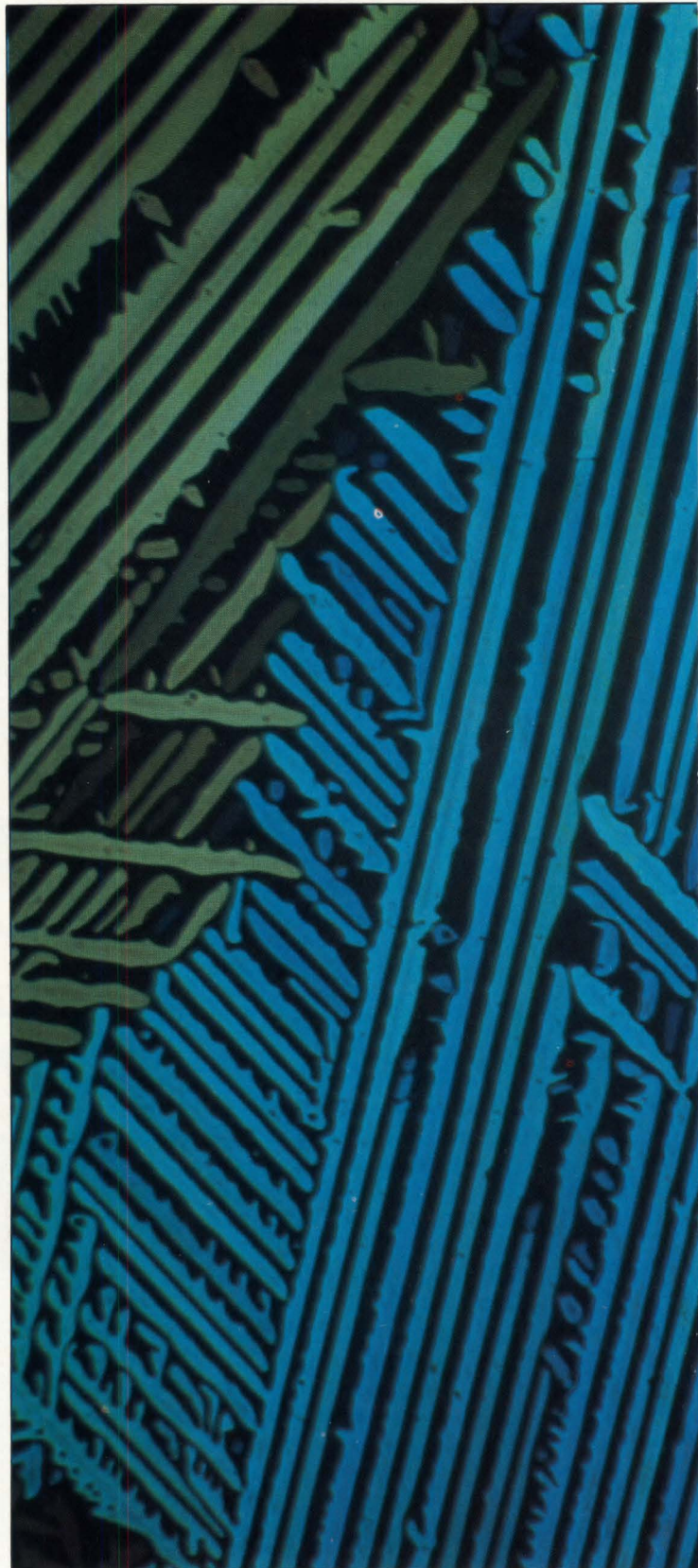


Photo by Roland Birke/The Image Bank

networks—such as networks that use binary synchronous (bisync) communications—risk being stuck with obsolete networks.

SNA did not rise to prominence overnight. When SNA was introduced, network users were slow to implement it because doing so meant making extensive changes to existing hardware. Users also balked because implementing SNA required extra processing power, forcing them to use larger processors than they might have otherwise needed. But as IBM mainframes designed for SNA networking made their way into dp departments, SNA gained increasing acceptance. According to an IBM spokesperson, more than 60 percent of all large computer users—covering more than 20,000 mainframes—use SNA.

SNA's popularity has also grown because of steady improvements IBM has made to it. SNA networks can now include large numbers of host mainframes. Terminals can communicate with any application running on any host in the network. Separate SNA networks can be linked to provide for a practically unlimited number of sessions between any terminal, host, and application on any of the cross-linked networks. SNA equipment can even communicate through other networks, including most public-switched lines and any communications systems using the popular X.25 protocols.

At the core of many of the recent improvements in SNA is an architectural segment called Logical Unit 6.2 (LU 6.2). In essence, LU 6.2 allows intelligent terminals or personal computers to be hooked into an SNA network. SNA products that IBM has released since 1982, including updates of Customer Information Control System (CICS) software, System/36 and System/38 minicomputers, Displaywriter word processors, and 5520 office-automation systems, have included LU 6.2.

Douglas K. Julien, a project manager who implements SNA applications for Boeing Computer Services in Seattle, calls LU 6.2 one of the most significant improvements in SNA. "With LU

6.2, SNA shifts from simply providing interactive data streams to allowing the interchange of data streams," Julien says. "For end users who want to transfer files or work with distributed databases using personal computers, data interchange is the only way to go." Julien adds that data interchange lets communications standards be implemented in hardware rather than software, a change that he says makes network operation cleaner and faster.

Under LU 6.2, anytime one computer determines that it doesn't have the program or the information requested, it automatically looks through a set of tables to find out if another mainframe in the network does have the data. "If you are on a terminal working with a mainframe in Houston," explains Cory Van Wolvelaere, manager with Arthur Andersen & Co., the big Chicago-based accounting firm, "and you want to find information based on customer numbers stored on a mainframe in Chicago, the Houston computer can automatically access the Chicago computer to get the information, process it, and ship it back to you."

Although LU 6.2 is probably the most important enhancement IBM has made to SNA, it is not the only one. Several other recent improvements lay the foundation for making SNA a more practical architecture for office-automation systems, in which IBM is taking a strong interest.

"IBM is counting on SNA to be the network standard for a long time."

Two recent SNA enhancements, Document Interchange Architecture (DIA) and the Document Content Architecture (DCA), allow users to specify how documents are to be passed along the network. Before the advent of DIA and DCA, SNA simply didn't provide easy ways to route documents according to standard protocols or to exchange documents between certain equipment. DIA now provides for special codes appended to a document that contain routing instructions to the network. DCA gives the rules for encoding and encrypting data within a document so it can be deciphered and displayed properly by any SNA equipment receiving it.

"DIA and DCA allow you to transfer documents intact, complete with tab characters, indentation, and anything else that has to do with formatting," explains John Cavalli, vice president for information systems services with Fireman's Fund American Life Insurance Co., San Rafael, CA. "They make office automation a lot more valuable to a large organization," he adds.

The release of SNA Distribution Services (or SNADS) in 1983 marked another important improvement to SNA. SNADS, which is now available for DISOSS and 5520 office systems, adds a store-and-forward feature to the network, removing the constraint that SNA sessions take place in real time. Users can send a single message onto the network and have it routed to one recipient or to a pre-established distribution list. The network nodes locate the desired destinations and route the messages to them. Destinations can be physical, such as a terminal, or logical, such as the name of a user.

Another area in which SNA has advanced is network management. In recent years, SNA has expanded to include packages that install new terminals and collect data on locations, uptime, error rates, inquiries, and processing rates more effectively and simply. Everything is tabulated and spewed out to the network manager.

SNA packages can now inventory all the components in a system. If problems occur, other packages can try to deduce what is wrong with the network, then offer suggestions to network managers. Arthur Andersen's Van Wolvelaere predicts there will be packages that automatically try corrective steps.

One of the biggest problems associated with merging SNA networks has been the installation and re-installation of the network. Every time improvements are made to SNA, SNA networks have to be reconfigured. Network users have complained that installation procedures have been designed by systems programmers for systems programmers to use. But IBM has been steadily revising the procedures to make them simpler. For example, software is now available to help users start up a basic network. The network operator responds to several prompts, and the software installs everything in a simple configuration that serves immediate needs. Later, users can fine-tune the network.

"Making changes is arduous, but it's getting easier," says Jacob Gross, vice president of information services at Chemical Bank in New York. "We



Photo by Terry Hourigan

Jacob Gross of Chemical Bank says recent updates of SNA have been easier to implement.

(Continued on page 88)

Test drive our Strategy.



Network Systems Corporation, the HYPERchannel® Company, invites you to check out our strategy.

THE RIGHT NETWORK. At Network Systems Corporation, our products are designed for a total networking strategy. With the right network, you can interconnect computer hardware from different manufacturers: super computers, mini and personal computers, workstations and terminals.

You've probably been told that a local area network lets you hook-up all types of computers and terminals, and everybody can then talk to each other. In the real world, it just isn't that simple. We offer what it really takes; hardware, software and system integration.

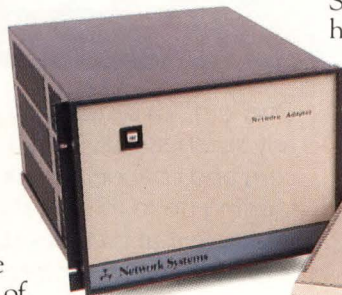
HYPERbus®, our 10 megabit network, will serve your user areas, providing the interconnection of mini-computers, PCs, workstations and terminals. Next, the user area should be linked to your larger mainframes to give users direct access to your integrated data bases. This is where HYPERchannel, our 50 megabit network, comes in. HYPERchannel gives you the power to move vast amounts of data between mainframes. The result is a truly responsive access path to the user area, which is the key to increased employee productivity. Finally, the different computers and terminals must be

able to talk to each other. NETEX® is our software product that lets them communicate in a common language.

With HYPERchannel, HYPERbus and NETEX applied to your **total** networking strategy, users can access and manipulate data like never before. Your data processing systems will work harder, faster and in unison.

THE RIGHT COMPANY WITH THE RIGHT STRATEGY. Networking is our only business and we want to be your networking company. We have the products, the experience and a field service organization that's there when you need them.

There are over 400 customers using our systems. If you are planning a network, call or write Network Systems Corporation. You'll see how our strategy can help you with your strategy.



Network Systems Corporation

7600 Boone Avenue North
Minneapolis, Minnesota 55428

612/425-2202

Accept no limitations.™

Offices in most major cities.

© 1984 Network Systems Corporation



Taking Control of Tomorrow:

Managing The Data

In today's volatile data systems environment, you simply can't afford to worry about the reliability of your suppliers. Not once. Not ever.

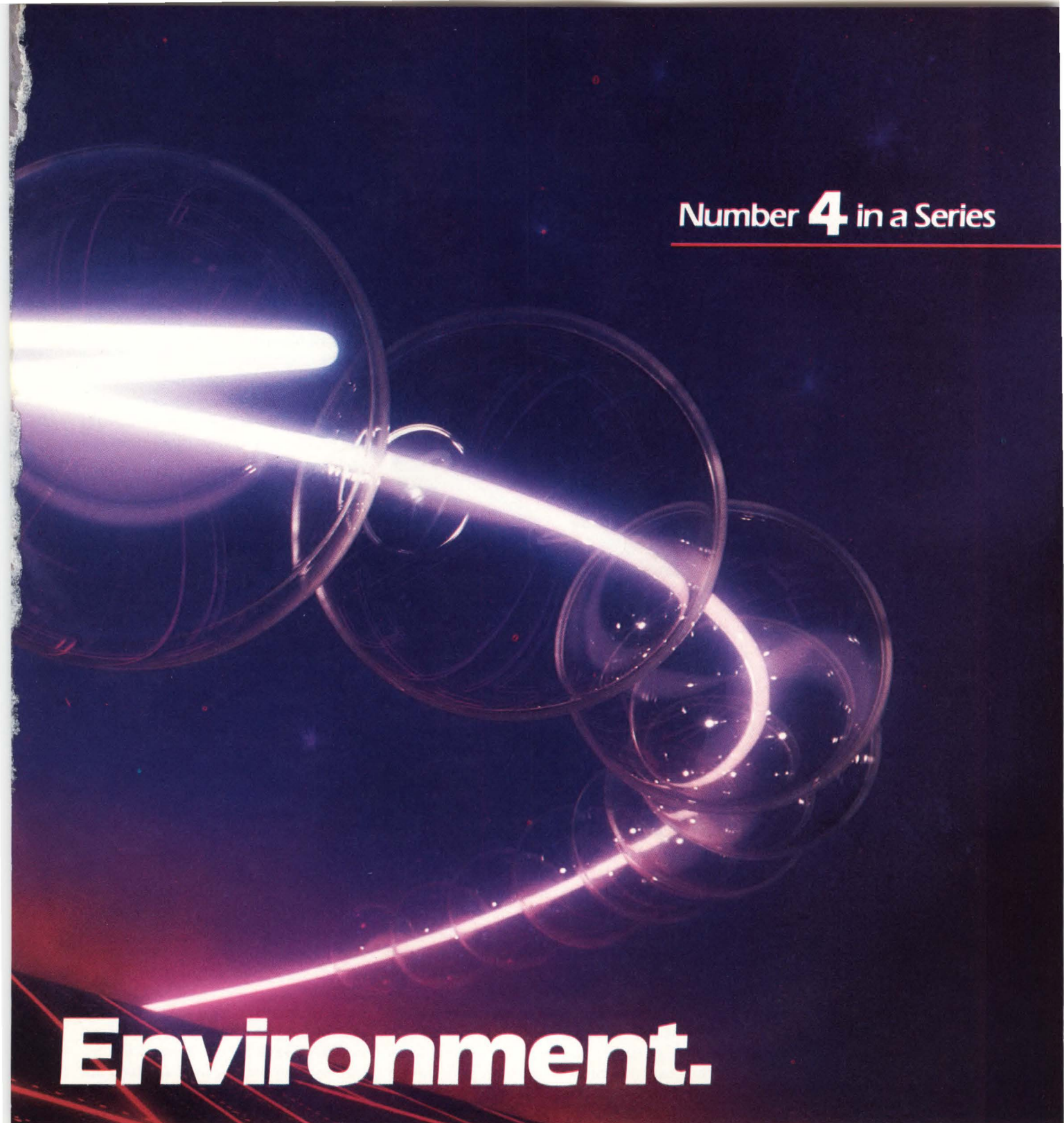
In fact, what you need isn't a supplier at all. But, rather, a partner. One you can trust to provide the advanced technology and commitment to service that lets you take control of your computer resource.

At T-Bar, we understand this simple truth. Which is one of the reasons we've remained the industry leader in switching and control for over twenty years.

Another is our product line. Without question, the most complete in the industry. One that features

Overlord,[™] a system allowing complete control of any size network from a single console. Or our datacom and channel matrix switches, with speeds ranging up to the T-1 VSM—the only technology available that provides data switching at T-1 environment speeds. And now, our new Channel Switching Matrix, the most advanced CSM we've ever offered.

Yet, where we're headed is just as impressive as where we are. Specifically, towards systems that offer real time decision-making as well as capacity planning through precise channel monitoring.

An abstract graphic featuring several overlapping, semi-transparent circles of varying sizes. A bright, glowing diagonal line, resembling a laser or a light beam, cuts across the circles from the upper left towards the lower right. The background is dark, with some subtle light effects and a textured, torn-edge appearance on the left side.

Number **4** in a Series

Environment.

T-Bar. With over 3000 customers worldwide, we have the knowledge and experience to help find solutions to your current data processing and data communications problems.

Just as important, we possess the vision and strength to form an on-going partnership with your business. We're T-Bar. Helping you take control of tomorrow.

We'll show you why it makes sense to choose T-Bar as your partner to manage your data environment. Call us at **(203) 834-8300** or write us at 141 Danbury Road, P.O. Box T, Wilton, CT 06897.

Tbar INCORPORATED [®]
Taking Control of Tomorrow

IBM's GRAND DESIGN

(Continued from page 84)

have a fairly large staff that just reconfigures the system, and we've tried to limit reconfigurations to once every two months. Lately, new releases have required us to specify less information, which gives us more of an opportunity to make changes without shutting down the entire network."

The improvements IBM has made and continues to make to SNA make one thing very clear: IBM is counting on SNA to be the network standard for a long time. "SNA is the foundation for wherever IBM is heading in communications networks," says John Cavalli of Fireman's Fund. "If you want to go where IBM is heading, then you want to be on SNA."

IBM realizes that if it wants to establish SNA as an industry standard, it can't afford to exclude other vendors' equipment from SNA. As a result, IBM has taken a cooperative stance toward competing vendors. For example, Big Blue recently released its 3710 Network Controller, a protocol converter that connects non-SNA equipment to an SNA network.

At the same time, other vendors realize the consequences of being locked out of SNA and are providing and upgrading their own gateways into the architecture. Wang Laboratories Inc. (Lowell, MA), Digital Equipment Corp. (Maynard, MA), and Data General Corp. (Westboro, MA) are reportedly adding LU 6.2 specifications to their equipment to improve communications with SNA products.

"Until recently, few systems could connect with SNA," notes Douglas Julien of Boeing. "But now other vendors are opening up to SNA. In a sense, the world is coming to IBM instead of IBM going to the world."

"I see a big change in IBM's stance regarding other vendors when it comes to SNA," says Jacob Gross of Chemical. "First of all, there is definitely more openness toward having other vendors communicate with SNA, particularly in the office-automation area. The other major change of focus is the strong thrust in the X.25 area. IBM is much more willing to tie into the public networks."

Gross sees IBM's cooperative ap-



Photo by Steve Leonard

"If you don't switch to SNA, you run the risk of falling out of the mainstream of IBM's development," warns Cory Van Wolvelaere of Arthur Andersen & Co.

proach as part of Big Blue's effort to take control of office-automation systems. "Until the last few years, IBM has been primarily a data-processing company, thinking in terms of selling more computers and terminals and maintaining the end-to-end business," he contends. "Now it wants to move more into office automation, an area in which it lost its leadership. IBM is fighting very hard to regain the initiative."

As SNA becomes more and more prevalent, competing network designs are languishing. For instance, although bisync networks are still widely in use and perform well when they are kept small and simple, development of bisync technology has stagnated. There is still no single set of standards for linking bisync equipment. As a result, users can run into the problem of having a bisync terminal that can't communicate with a bisync processor. A bisync network also requires a good deal more management attention than an SNA network does.

But perhaps the biggest reason for bisync's growing obsolescence is that IBM itself has stopped developing bisync products and is simply marking time, maintaining existing gear and selling products designed a decade or more ago. Advanced features are developed and released almost exclusively for SNA. Non-SNA users who see

more and more of the data-processing world hooking into SNA have to live with the nagging question: "Is today the right time to begin migrating to SNA?"

The best time to migrate to SNA is not easy to determine, especially for users of bisync networks. Bisync is still popular, still fairly well supported, and still effective for certain networks. According to most observers and consultants, there is no great reason to rush into SNA if a bisync system is still useful.

"The time to move from bisync to SNA depends on factors within each organization," says Arthur Andersen's Van Wolvelaere. According to Van Wolvelaere, these factors may include the need to upgrade to a new processor, the need for more throughput with the current equipment, and the desire to cut communications costs by cutting down on duplicate lines.

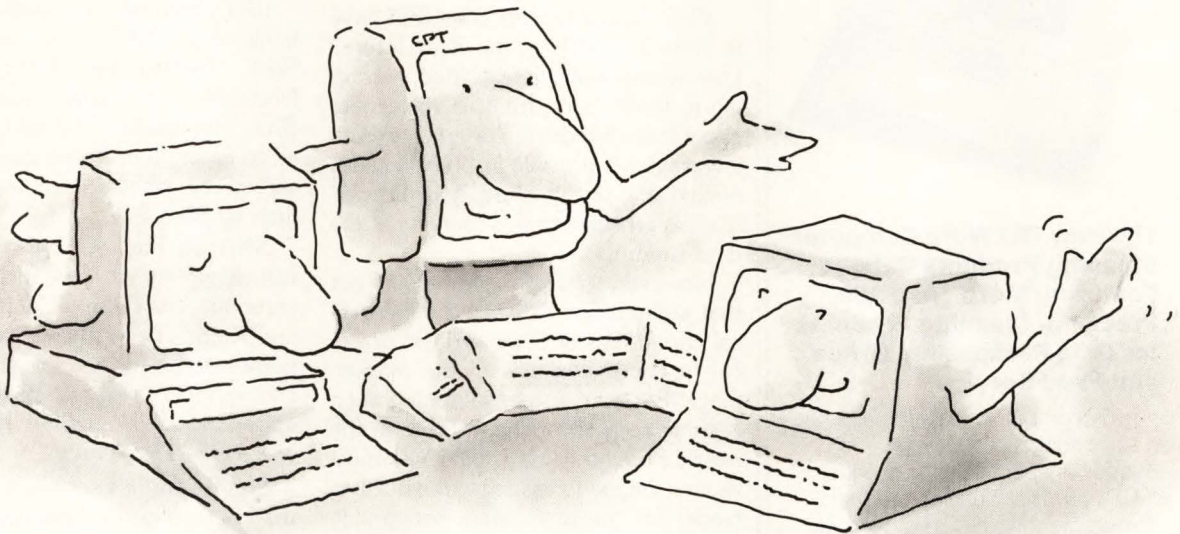
Even IBM concedes that it isn't necessary to switch to SNA immediately. "If a bisync network is stable, it may not be necessary to move to SNA right away," says Robert J. Sundstrom, manager of communication-system architecture for IBM in Research Triangle Park, Raleigh, NC. "It shouldn't become any more difficult to make the change if you delay a little while. In fact, it may even become easier as more and better protocol converters are released."

But most experts agree that, eventually, all large users will have to migrate to SNA. "There is no window of opportunity slamming closed for people who are thinking of converting from bisync to SNA," says Jacob Gross of Chemical, "but the reasons for converting are getting stronger. IBM isn't supporting anything new in bisync. Meanwhile, SNA networks are getting more powerful."

Users who continue to delay switching to SNA may also be setting themselves up for problems later on, according to Van Wolvelaere. "If you don't switch to SNA, you run the risk of falling out of the mainstream of IBM's development," he warns. Van Wolvelaere also notes that users who do switch to SNA need to keep up with network enhancements. "Once or twice a year,

CPT introduces real office ~~automation.~~

productivity



Real office automation is friendly. Productive. It's a good neighbor; working *with your existing systems*, not against them. It's as compatible with human beings as it is with personal computers and mainframes.

It's by your side when you can't remember what you sent, how you filed it or who you sent it to. Real office automation retrieves every reference in the entire office... in seconds... guided only by a word or a phrase.

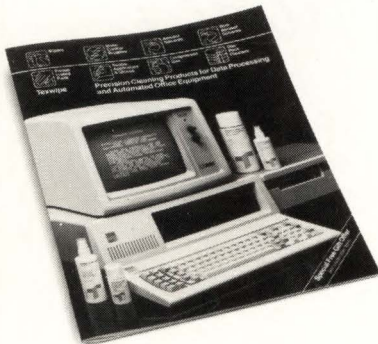
Electronic mail, calendaring, scheduling and other tasks are almost effortless because its technology is startlingly advanced. But we don't dwell on that. Technology is not as important as how easily and effectively you can use it. *productivity*

Real office automation is available now from CPT... for large or small offices. Call 1-800-447-4700 for a free booklet and a friendly introduction.



1-800-447-4700

The Answer to More Than 250 Preventive Maintenance Problems



The New TEXWIPE Computer Cleaning Products Catalog, Featuring More Than 250 Precision Cleaning Products for Data Processing, Office and Field Service

- microcomputer cleaning products
- static control products
- tape transport cleaning products
- CRT terminal cleaning products
- micrographics cleaning products
- disc drive and disc pack cleaning products
- 52 full-color pages including 10-page care guide, indexed by product

TEXWIPE

FREE

Send for your **FREE** Computer
Cleaning Products Catalog

NAME _____

TITLE _____

COMPANY _____

ADDRESS _____

P.O. BOX _____ CITY _____

STATE _____ ZIP _____

TEL. # () _____



TEXWIPE
650 East Crescent Avenue
P.O. Box 308
Upper Saddle River, NJ 07458
Sales/Service (201) 327-5577
Executive Office (201) 327-9100
Telex 130370

CIRCLE 43

IBM's DESIGN

"SNA did not rise to prominence overnight."

IBM makes a change in some aspect of SNA system software," he says. "The further you fall behind from the most up-to-date version, the more difficult it is to make the jump to the present level."

What improvements does IBM have in store for SNA in the near future? One avenue being investigated, according to IBM's Sundstrom, is voice/data integration. Sundstrom says voice/data integration is possible in SNA because neither the architecture nor the network is sensitive to the contents of the data stream.

However, other experts point out that a gap exists between the theoretical capabilities of SNA and the practical functions available in the marketplace. For now, voice/data integration is somewhere over the horizon. In the near future, they say, IBM will most likely continue to assemble the building blocks for the one-system networking world it envisions.

Chemical's Gross predicts IBM's next step will be to expand LU 6.2. Currently, only a few intelligent terminals can access more than one application at a time. These terminals trick the SNA network by appearing to be four separate terminals. Although the trickery works, it causes a host of maintenance problems, primarily because users need a separate name for each logical terminal.

"A few years ago, no one thought of multiple-application access because just being able to access different systems from one terminal was something new," Gross notes. "But multiple-system access came in around 1978, and access to multiple applications is now a fairly common need."

Two of the most publicized of IBM's prospects are its PC Network and its local-area network (LAN). Much speculation has attended the features of these systems, which may allow efficient any-to-any communications within a building. PC Network was announced

last August, and is now available. IBM described its LAN in a May 1984 "statement of direction" that spoke of release in two to three years.

Users have been grumbling about IBM's delays in releasing the LAN and PC Network. But Arthur Andersen's Van Wolvelaere says it's not unusual for IBM to drag its feet in new markets. "They let upstarts open new markets," he asserts. "IBM waits, tries to be second, and then tries to take over the market."

IBM's Sundstrom suggests that users think of the LAN as an extension of SNA. "Neither the LAN nor the PC Network is mutually exclusive from SNA," he insists. "The two are intended to meet other needs that are better served by smaller, simpler networks than by SNA."

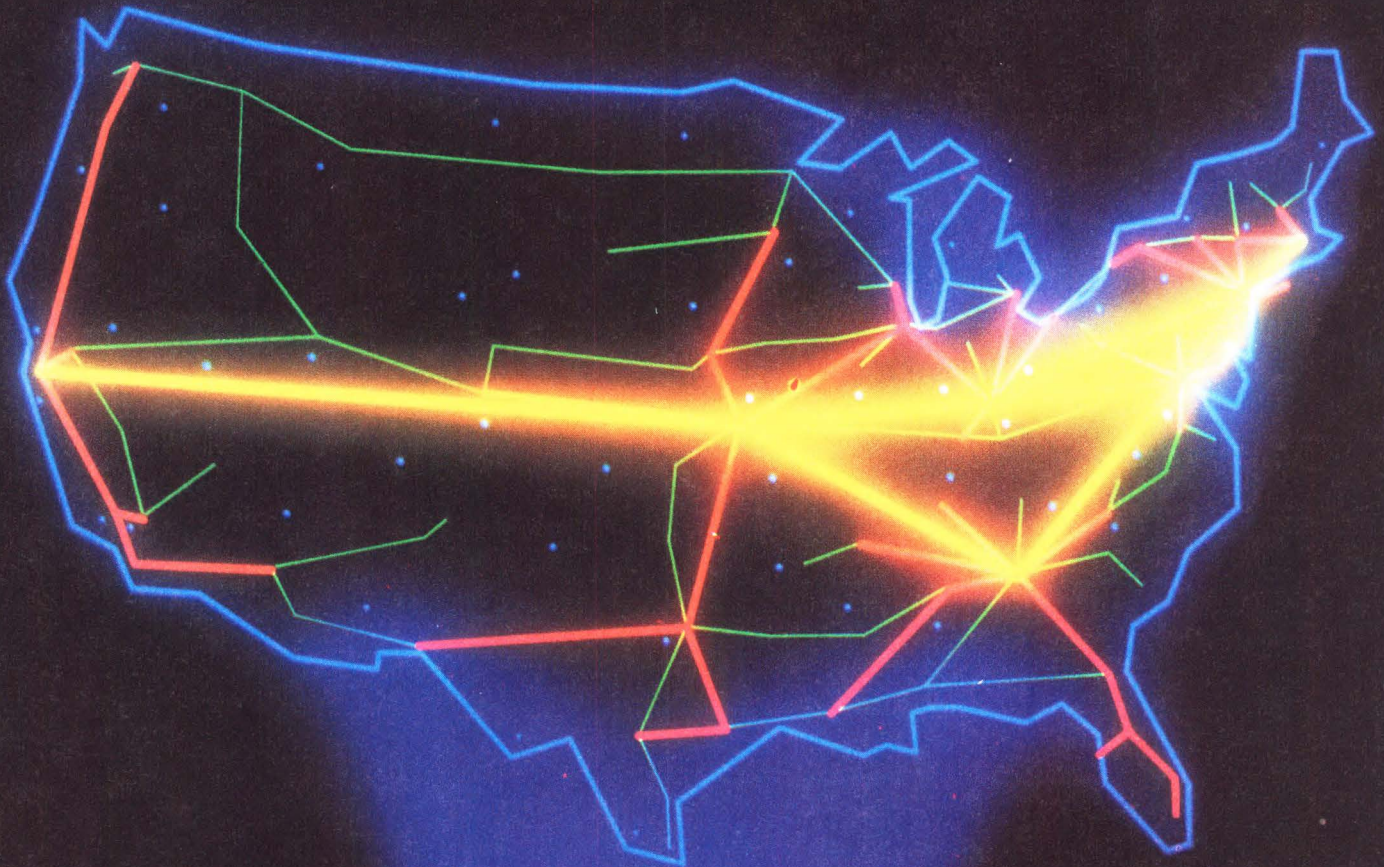
SNA already can be implemented with a variety of links, including Synchronous Data Link Control (SDLC) and X.25. The new LAN will be comparable to SNA's physical and data-link control layers and will support all the upper layers of an SNA network, as well as the PC Network.

Sundstrom advises users to think of the LAN as just another way to move things from box to box. According to Sundstrom, SNA equipment will be able to use the LAN for links within a building or a complex just as easily as it can already use other links for longer distance communications. "As these networks grow," he predicts, "there will be ways for your personal computers and programs under SNA to migrate onto the LAN. You won't outgrow the LAN, you'll just put in multiple LANs and connect them with your SNA backbone."

SNA is far from being the perfect network architecture, but it is improving. With each new product announcement, IBM strengthens SNA's position as the standard network design. As SNA gains in popularity, users of non-SNA networks are finding support for their systems weakening. If the experts are right, the status of non-SNA networks will continue to decline. ☐

Robert A. Moskowitz is a free-lance writer and management consultant based in Woodland Hills, CA.

No one manages data networks better than Emcom.



When the management of this 1,000 line, 23,000 terminal network wanted more control to build a more responsive and reliable network, they turned to Emcom Corporation and the NCS 70 Series Network Control System.

With immediate reporting of all network error conditions and intelligent error trapping for rapid diagnosis, the NCS 70 Series proved to be the flexible, responsive management tool they needed for reliable network control.

The NCS 70 Series supplies completely integrated real-time control and planning database

EMCOM

to set the standard in network control systems. The customer found that the NCS 70 Series' crisp color displays and easy-to-read color printer reports helped put more information at their command than any other system. They were equally impressed when we told them the NCS 70 Series could be expanded to monitor any size network up to 4,096 lines. No one manages data networks better than Emcom. Find out for yourself. Write or call us for more information on what we can do for you.

Emcom Corporation
800 E. Campbell Road, Richardson, Texas 75081
(214) 437-1488 Telex 882174

Emcom International, Inc. • Stockholm • London • Paris • Frankfurt

AUTOMATED TOOLS ARE BACKLOG BREAKERS

Part III: Programmers welcome programming-productivity tools to cut through logjams of applications.

by Rick Cook

The incongruity of programming-productivity tools is that they serve skilled craftspersons. Programming has many of the characteristics of a 19th-century preindustrial trade. It's a labor-intensive job done by professionals who work primarily on a custom basis; and most programmers take great pride in work well done. A word like "productivity" rings harshly against the delicate balance of skill and experience programmers need to produce quality products.

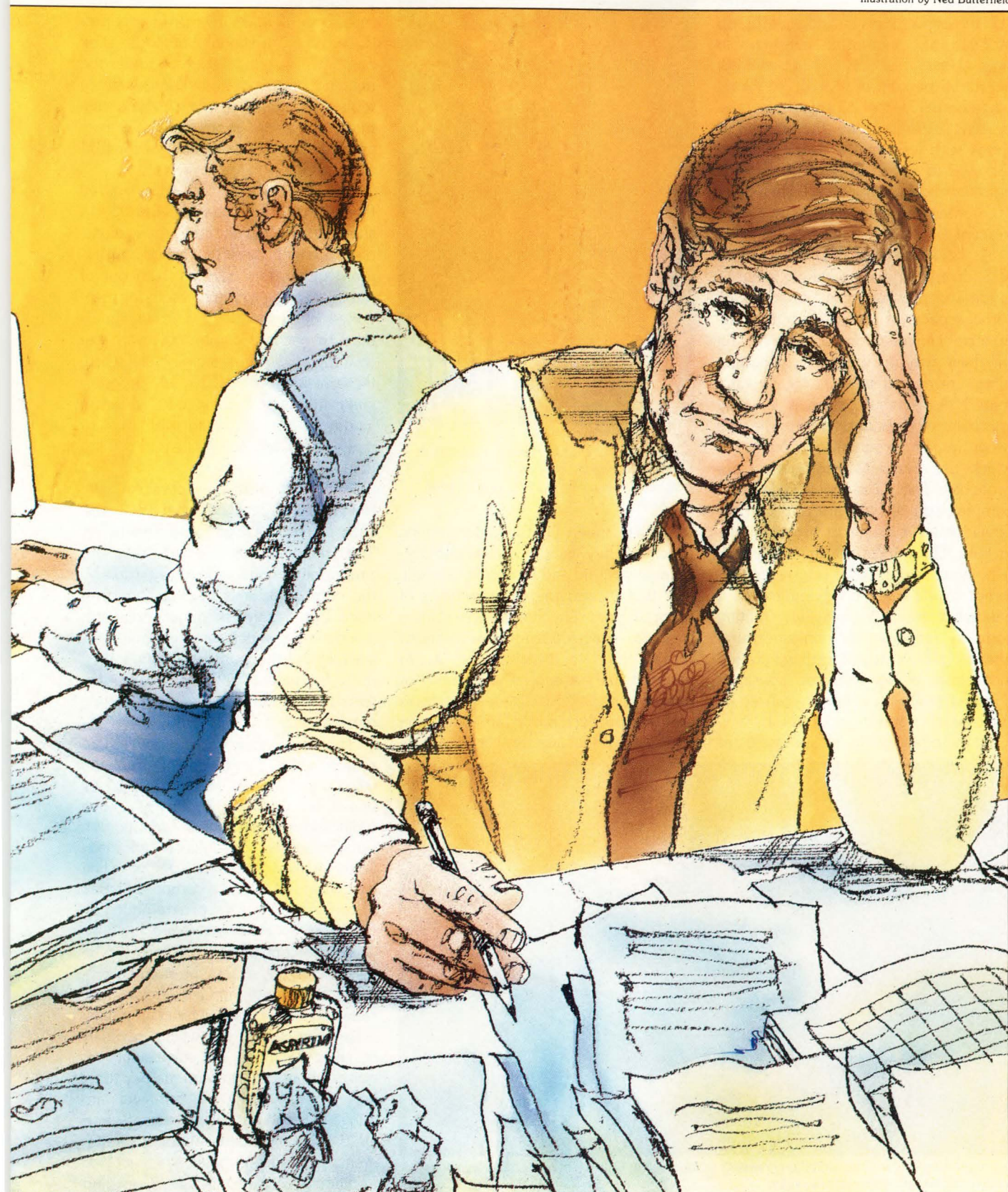
Yet interest in productivity tools in MIS/dp shops trying to get backlogs under control is high. Late last summer, Raymond Fields, executive vice president of Leading Software Technologies, Cleveland, got an object lesson in just how much interest there is in in-

creasing programmers' productivity.

Leading Software Technologies had been developing an applications generator called The Intelligent Assistant (TIA), which automates detailed systems designs, program designs, documentation, and code generation. Last August, six months before TIA was due to go on the market, a national computer newspaper ran an article on the system. "We got over 7,000 phone calls in two weeks," Fields says. "Callers interrupted other callers by telling the operators it was an emergency. Two months later, an international publication reran the story. We got swamped again."

The reason: Applications backlogs are getting longer, and programming aids can help reverse the trend. Ac-





PROGRAMMING PRODUCTIVITY

cording to a recent survey by Applied Computer Research (ACR), Phoenix, AZ, the applications backlog in MIS/dp facilities has increased considerably since 1981. In ACR's 1981 survey, nearly 50 percent of MIS/dp shops reported a backlog of 12 months or less. In ACR's 1984 survey, the number of shops with less than a year's backlog dropped to about 20 percent; and the number of shops reporting a backlog of 36 months or longer grew to nearly 33 percent.

As backlogs grow, more and more MIS/dp managers are taking steps to automate programming, or at least some aspects of the programming sequence. However, no one agrees on the best way to automate programming—or even if it can be totally automated. As a result, there is a whole spectrum of tools designed to improve programmer productivity, many of which use mutually incompatible approaches. The most sophisticated and complex sort of tools are applications-development systems or program generators. These tools, which usually contain fourth-generation languages, attempt to eliminate programming as a handcraft by automatically creating code in response to non-procedural queries (in the case of fourth-generation languages) or by following specifications set down by systems analysts (in the case of program generators).

At the other end of the spectrum are



Jim Rains, director of systems and programming at Dayton Hudson Department Stores, Minneapolis, believes program generators are just as efficient as traditional methods.

tools that speed up the programming process. They include utilities like test-data generators and flexible screen editors that fit into the work routines of programmers. The aim of these tools is to make programming more efficient rather than to revolutionize it. In between are an enormous number of products ranging from code generators and systems that support libraries of re-

usable software modules or code, to products that help to streamline, structure, document, or test programs produced by traditional methods. The number of products that fall under the heading of "programming-productivity tools" is huge. According to one estimate, there are more than 100 program generators available just for IBM mainframes.

Yet, the same 1984 ACR survey that showed huge backlogs in MIS/dp shops also showed that applications-development systems, including program generators, ranked 10th out of the 14 backlog-trimming methods mentioned by respondents. "Professionals tend to become comfortable with the way they program," says Phil Howard, the president of ACR. "A program generator is something new to learn. You need a lot of management push to make new technology like this take hold."

Another problem—possibly the toughest—is deciding what the yardstick for productivity gains should be. The traditional method is to measure programmers and productivity tools by the number of lines of code they produce. But, as some managers point out, this makes as much sense as rating carpenters by the number of nails they drive. So, recently, other software-measurement systems have been getting more attention.

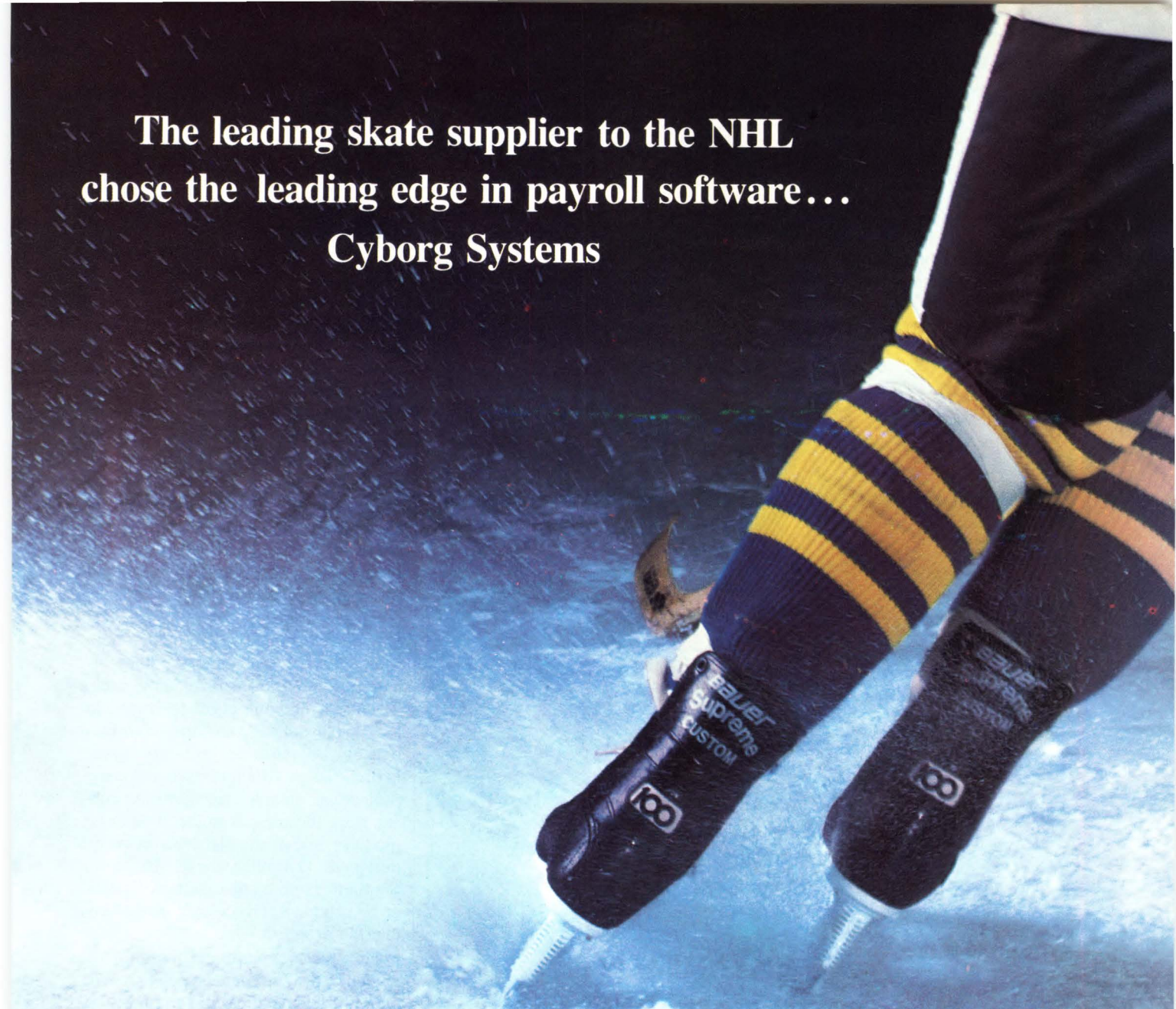
The most widely used measurement system is the "function-point" scale devised by Allen Albrecht of IBM. It's based on the weighted sum of five major external attributes—inputs, outputs, inquiries, data files, and interfaces—called function points. The function-point total is a composite index of the amount of total programming effort a project is likely to need.

The function-point score can even be used to roughly assess the size of a program, because languages differ in their ratios of lines of code to function points. Assembler language, which parallels machine functions, not surprisingly requires about 320 statements per function point. Cobol, a higher-level language, uses about 105 statements, and DMS/VS only needs about 25 statements per function point.

Finding a yardstick for measuring



A program generator has doubled programmer productivity at Data 10 in Irvine, CA, says John Young, systems-programming manager.



The leading skate supplier to the NHL
chose the leading edge in payroll software...

Cyborg Systems

Bauer chose Cyborg's payroll software for the same reason that more professional hockey players use Bauer skates than any other — time tested quality. Cyborg has been in the general accounting software business for over ten years. Our Payroll Administration and Human Resource Information Systems are now standards of the software industry.

Like Bauer, Cyborg isn't satisfied with simply being today's best. To hold that edge, we are constantly testing and enhancing our products. This allows an unlikely basis for comparison between skates and software — durability.

All Cyborg products are backed by warranty and maintenance services that will keep your Cyborg software current no matter when you purchase it. Changes in taxation, industry standards, and legislation are incorporated into your software as they happen, forever.

For more information on Cyborg products, send in the coupon or call now. Take a shot — Bauer did.

Cyborg Systems, Inc.

2 N. Riverside Plaza
Chicago, Illinois 60606
Phone (312) 454-1865

CIRCLE 45

Please send information on the following Cyborg software.

- ☐ Payroll Administration
☐ Human Resource Management

Name _____

Company _____

Title _____

Address _____

City _____

State _____

Zip Code _____

Phone _____

Mail to: **Cyborg Systems, Inc.**
John Kluska
2 N. Riverside Plaza
Chicago, Illinois 60606

programming productivity is the first step. Next comes coding, which is the most visible part of program production and maintenance, even though it represents only a fraction of the total effort.

According to T. Capers Jones, former manager of programming-tech-

nology analysis for ITT's huge programming staff, coding is only about 15 percent of the total effort to write and maintain programs. Finding and removing programming errors amounts to between 35 percent and 40 percent of a program's cost; maintenance consumes a large chunk of what is left.

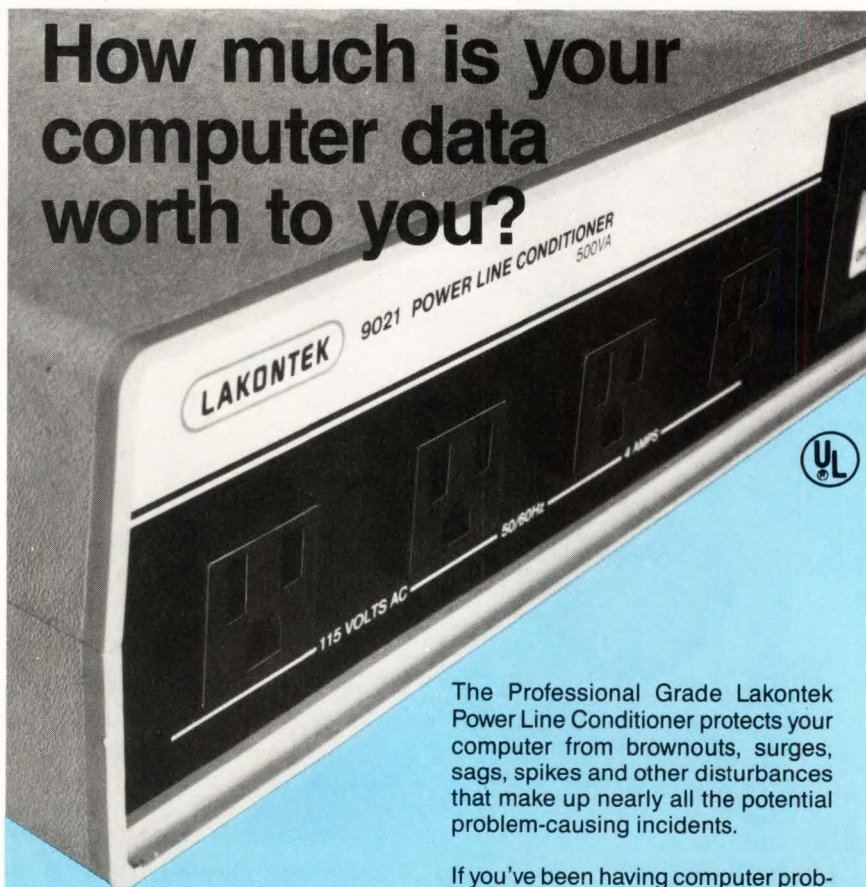
Another approach to productivity assessment puts between 50 percent and 80 percent of the effort on a typical program in the maintenance category because some errors aren't found until the program is in use, and are therefore counted as maintenance.

Program maintainability is a large part of productivity and a force behind the increasing use of new methods of producing code. The most commonly used new method is structured programming, which creates programs that are more readable and maintainable, albeit at the expense of some machine efficiency. In effect, structured programming trades time in the design phase of a project for time in the debugging and maintenance phases. The aim of structured programming is to segment a program into modules according to the major functions of each. The inputs and outputs of each module are rigidly defined, and the interfaces between modules are carefully specified. A large structured-programming project will advance slowly to the coding stage because a great number of modules and their interfaces must be designed. But once these structured segments fit perfectly together, it's easier to produce correct code and maintain the program.

However, structured programming presents MIS/dp managers with a couple of problems. First, the emphasis on design means that it will take longer before there is anything on the computer to show anxious users. Users who have waited a year or two for an application are not going to be thrilled at the prospect of waiting even longer because MIS/dp has adopted a new methodology.

The second problem with structured-programming tools is that many programmers don't want to change their work habits. Programmers often complain that structured code is less machine-efficient than traditional methods of programming. Some MIS/dp managers would agree, although for a different reason. With many unstructured programs, and hardware near capacity, managers are reluctant to implement a change that will increase the backlog and require upgrading machine facilities. But, forward-thinking

How much is your computer data worth to you?



The Professional Grade Lakontek Power Line Conditioner protects your computer from brownouts, surges, sags, spikes and other disturbances that make up nearly all the potential problem-causing incidents.

If you've been having computer problems, or want to avoid future ones, get a Professional Grade Lakontek Power Line Conditioner. Lakontek... the powerful line filter, regulator and conditioner with the capacity to protect all office computers, even up to four PC's simultaneously.

LAKONTEK MODELS 9021 AND 9022 POWER LINE CONDITIONERS™

See your nearest dealer or call (201) 755-7680 for further information.

Your computer could be subject to as many as 100 power line transient disturbances a month...causing vexing problems that you may be blaming on software "glitches" or other reasons.

Computers are designed to operate reliably *only* with clean power lines and that simple "surge protector" you now may be using just can't do the job.



LAKONTEK™

Electronic Management Products
2385 South Clinton Avenue, CN-1032, South Plainfield, NJ 07080

BACKLOGGED WITH END-USER REQUESTS?

YOU CAN HIRE
THIS COBOL
PROGRAMMER...

OR YOU CAN HIRE
THIS ONE.



Cutting through the applications backlog using COBOL or PLI is pretty tough business. In order to catch up and "get current" with your end users' requests, you need a team of 8-armed programmers...or more realistically, you need FOCUS.

4th Generation Technology

FOCUS is the 4th generation language/DBMS that handles the programming details for you—details that COBOL and other languages require you to specify at great length. It combines a non-procedural, natural language with advanced database and 3270 screen management technology. So, you can accomplish data analysis, storage and maintenance functions with a handful of simple English statements **instead of hundreds of lines of equivalent COBOL or PLI code!**

Reads All Data Center Files

FOCUS can access any existing file or database in your information center, including: VSAM, QSAM, IMS, IDMS,

TOTAL, ADABAS, MODEL 204, SYSTEM 2000 and DL/I. It increases programmer productivity by hundreds of per cent, even on the most complex and demanding applications. And with its new TableTalk™ windows, it provides non-technical end users with the ability to develop their own reports and graphs after just a few moments familiarization.

Prototype On Your PCs!

PC/FOCUS is a functionally equivalent FOCUS system for your PCs. With it, you can prototype applications without consuming mainframe resources. Procedures and files can then be uploaded for production execution.

Put Application Backlogs Behind You With FOCUS

It's the system that spans all of your application development needs, yet stays easy to use as those applications grow more complex. Find out how to put it to work for you, now. For details, write to Don Wszolek, Information Builders, Dept. F1, Inc., 1250 Broadway, New York, NY 10001.

INFORMATION BUILDERS, INC.

New York: (212) 736-4433 • Washington, D.C.: (703) 276-9006 • St. Louis: (314) 434-7500 • Chicago: (312) 789-0515
Dallas: (214) 659-9890 • Palo Alto: (415) 324-9014 • Los Angeles: (213) 615-0735 • Houston: (713) 952-0260

MIS/dp managers argue that the increased ease of maintenance and reduced debugging time more than make up for the difference in machine usage.

"Is structured programming as efficient as the old way?" rhetorically asks Judy Goranson, a consultant for the John Hancock Mutual Life Insurance Co., Boston, which has used structured programming since the mid-1970s. "No. Nothing is. But the whole idea of structured programming is that a programmer's time costs more than a little extra machine time." Estimates of the efficiency differences between structured and nonstructured programming vary, but many experts rate structured Cobol programs at about 10 percent less efficient than nonstructured programs.

Naturally, some programmers approach programming-productivity tools with a jaundiced eye. The programmers who resist them are also likely to be the most experienced ones in the MIS/dp shop. Some managers are reluctant to force the issue. As a result,

**"Program generators
are the most
complex sort of
tools."**

when you talk about structured programming, you hear variations on: "Our shop is committed to structured programming—except for Fred and Nancy over there."

Some managers deploy conversion tools to help ease old-timers into structured programming, says Bill Morgan, vice president of Group Operations Inc., and the author of Superstructure, a generator that converts unstructured Cobol into structured code. "No one admits it when they buy Superstructure, but I'm sure some users buy it to ease the transition," he says. By feeding unstructured language through a structurer, it can be turned into a structured program without forcing the

methodology on reluctant programmers.

When it comes to repairing the programs of the past, structured-programming tools have few detractors. All those hundreds of thousands of lines of code that have accumulated over the years, been added to, modified, and passed from generation to generation of programmers are major contributors to applications backlogs. "We don't suggest the use of Superstructure if the programmer who is responsible for the module has been working on it for three or four years and is thoroughly familiar with it," says Judy Goranson, whose shop uses Superstructure to update old code. "We use it mainly on a system that has to be changed." At John Hancock, Superstructure is used by programmers who are assigned to unfamiliar modules because it allows a programmer to trace the module's logic.

Another benefit of structured programming is that it can produce reusable modules. Programming libraries,

TRAINING

SYSTEM V

For 15 years, we've taught our own people to use the UNIX™ System. Now we can teach yours.

WHY AT&T FOR UNIX SYSTEM TRAINING?

AT&T offers the most current and comprehensive training on UNIX Systems.

AT&T provides the best learning environment; one terminal per student; evening access to facilities; and expert instructors.

AT&T has the breadth of courses your staff needs to unlock the full power of UNIX System V.

AT&T courses signal your commitment to improving productivity with high-quality training for your employees.

AT&T COURSES OFFER:

The same training and methods we use to

teach the UNIX System to our own people.

Rigorous classes designed to teach specific skills for job-specific applications.

Five areas of instruction ranging from introductory to advanced levels for Managers/Supervisors, Users, Systems Administrators, Applications Developers, and Systems Programmers.

Frequent class offerings so you won't have to wait for the courses you want.

Conveniently located training centers in Princeton, NJ; Columbus, OH; Lisle, IL; and Sunnyvale, CA. Or we'll bring our courses to your company and hold the training at your convenience.

For more information, a catalogue, or to register for classes, call 1-800-221-1647, Ext. 33.



SEND FOR HENCO'S FREE DEPARTMENTAL TOOL KIT.

See how INFO will make your company more efficient and your life a lot easier.



HENCO Software's INFO has been proven over more than 10 years with over 2,000 installations and some 20,000 users to be a unique and powerful relational data management system and fourth generation language that integrates beautifully with your existing investment in software. That means you don't have to waste valuable programming time writing customized reports or specialized query sequences. INFO lets you customize existing applications and reports faster than COBOL and other programming languages and that substantially reduces MIS department backlog.

But, more importantly, it makes departmental distributed computing possible in virtually every department of your company delivering ad hoc query and reporting, document retrieval and text management, word processing, graphics and business planning. INFO's powerful query and reporting capability allows non-MIS personnel to use data from existing applications. That can

significantly enhance the productivity of your professional staff and take a lot of day-to-day pressure off of you.

We've developed the INFO Departmental Tool Kit that explains what INFO does and how it works in your terms. The kit contains brochures showing other department heads how *they* can use INFO to increase the effectiveness of their departments and substantially reduce decision-making time by performing many functions that only the MIS department could perform before INFO. Yet, *you* maintain control. Send for *your* Departmental Tool Kit today to see how MIS and other department heads are using INFO in their companies.

Call 617-890-8670

HENCO
SOFTWARE

100 Fifth Avenue
Waltham, MA 02154
TWX 710-324-7701

BOSTON • SAN FRANCISCO • DALLAS • WASHINGTON, D.C. • MONTREAL • WORLDWIDE
CIRCLE 49

tools that keep reusable program segments on file to be strung together to produce most or all of a program at need, have become popular programming aids. Packages such as Panvalet from Pansophic and Librarian from Applied Data Research help MIS/dp shops organize reusable modules that can be inserted into many applications.

The theoretical advantages of libraries are considerable. Because the modules are already parts of working programs, they should be well-tested and relatively free of bugs. Unlike some other techniques, module libraries promise major productivity improvements without turning MIS/dp on its ear and forcing programmers to learn radically different ways of doing their jobs.

To make the library concept work, however, modules have to work in many different programs. According to T. Capers Jones, that means programmers must do a thorough job of structuring modules and their interfaces. As

a practical matter, attempting to adapt existing modules to the library concept doesn't work well.

Nonetheless, Jones predicts that in 15 years' time, about half the code produced by MIS/dp shops will come from reusable sources. Even now, Jones says, some large corporations using the code-library concept are getting productivity rates in the neighborhood of 24,000 to 28,000 lines of code per year, with half of that coming from libraries.

The programming library is close in concept to some of the facilities for software development provided by the Unix operating system. Programmers who have worked with Unix praise its facilities for writing and debugging code, no matter which language is used. Although the language most commonly associated with Unix is C, Unix software-development tools are available in other languages, too, including Fortran and Cobol. Unix contains a powerful set of utilities and an excellent command processor. The sys-

tem has highly regarded documentation facilities and a Source Code Control System designed to keep track of changes in a program. Unix for IBM mainframes and plug compatibles under IBM's VM operating system is now available from Amdahl, Sunnyvale, CA, and called Universal Timesharing System.

Unix is no panacea, however. Unix has been criticized as being slow and somewhat fragile. Also, installing a new operating system is not likely to be taken lightly by even the most ambitious MIS/dp managers. Program generators are also built around the idea of reusing code. Generators are essentially automated libraries that can combine code modules on command to produce applications and parts of applications. Generators of one sort or another have been around for a long time. A report-writing program is in a sense a program generator, and some of the more complex ones have been used to do jobs that their designers probably never dreamed of.

(Continued on page 102)

PROTECTION FOR YOUR COMPUTER SYSTEM



SMOKEETER Electronic Air Cleaners protect your computer by removing smoke and dust particles before they have a chance to damage the system. Clean air is recirculated throughout the room decreasing the problems associated with airborne dust — costly maintenance and lengthy downtime. A clean environment will also extend the life of magnetic media.

SMOKEETER

United Air Specialists, Inc.
4440 Creek Road
Cincinnati, Ohio 45242
(513) 891-0400

For more information on how SMOKEETER can protect your computer investment, write or call TOLL-FREE **1-800-543-1300**. Ask for operator #722.

SOURCE: 004

NEWSPAPERS ARE JUST A FIRST DRAFT OF HISTORY.

Get your news directly from the source—Northern Business Information. The leader in market intelligence for the telecommunications and computer industries.

Complete the coupon for a free kit.

Name: _____

Title: _____

Company: _____

Address: _____

RETURN TO: NORTHERN BUSINESS INFORMATION INC.
P.O. BOX 1015 NEW YORK, NEW YORK 10008

CD45

**AND NOW FOR AN IMPORTANT
MESSAGE ABOUT A NEW
JCL-CHECKING PRODUCT
CALLED JOB/SCAN.™**

***ERROR

We all know that JCL-checking software can flag JCL errors before a job runs to save you valuable time day or night. That's why we'd like to call your attention to JOB/SCAN, a special new JCL-checking product that can save you more time than ever.

Unlike other JCL-checking products, JOB/SCAN lists error messages right below the statement that caused the error. So you don't have to waste time searching for the message on a separate sheet.

Even those dreaded user exits are a snap to write with

**JOB/
SCAN, and
require no systems
programming knowledge
whatsoever. You can write
checks for even the most com-
plex standards in a matter of
minutes.**

Install JOB/SCAN *today*.
And eliminate irritating reruns due to JCL errors like misplaced overrides, misspelled keywords and missing datasets. Because JOB/SCAN makes such a thorough check of syntax, catalog and program libraries you can be sure that a job that's been scanned

JOB/ SCAN, and

will actually work when submitted.

When it comes to JCL-checking software, the message is this: No other product can match JOB/SCAN. Or even come close.

**To check out JOB/SCAN, call
or write today. Diversified
Software Systems, Inc., 996
Minnesota Avenue, Suite 205,
San Jose, CA 95125
(408) 998-0414.**



**Diversified
Software
Systems, Inc.**

JOB/SCAN is a trademark of Diversified Software Systems.

(Continued from page 100)

However, just because generators and other automating tools are a relatively old idea doesn't mean that they get a lot of respect. Quite to the contrary, because many of the early products were crude, managers' familiarity with them tends to breed, if not contempt, some skepticism.

The biggest complaint about generators is their inefficiency. "It's kind of foolish for professionals to think they can program the whole world with a program generator," says John Young, systems-programming manager for Data 10, a service bureau in Irvine, CA, that is a beta-test site for a program generator that hasn't yet been released. "Program generators have to be very general, so speed is difficult to achieve." In spite of the efficiency problems, Young says program generators have their place in data processing. "They're great for prototyping. You can get a model application up and running and in the user's hands in a short time. In modeling, the efficiencies aren't that important."

In particular, programming for on-line systems benefits from generators. "When you're trying to start a project on a fairly large online system, just bringing up parts of it to programming takes a while," explains Young. "All the basic information has to be laid down before you can start to write an online system. A program generator is well suited to that use. Once you've got everything laid out, you can go back and rewrite the application."

However, creators and some users of program generators claim there is lit-

tle or no difference in speed between a generated program and a written one. "The applications are very efficient," says Jim Rains, director of systems and programming for Dayton Hudson Department Stores, Minneapolis, which uses Pansophic's Telon program generator. "We haven't found any more overhead or performance degradation in Telon applications than in traditional applications."

Programming and documentation aids can also improve programming productivity. Unlike program generators, these tools are seldom resisted by data-processing personnel. Programming and documentation aids try to either save the programmer time or make the programming process more efficient, and they adapt easily to the programmer's way of working. Many of these products don't promise large gains in productivity, but they can make a programmer's life easier.

One tool that Data 10 uses to do a better job is Pie/Sessions from Technology Software Concepts of Tustin, CA, which allows programmers to run many TSO (IBM's Time Sharing Option) sessions on a single terminal and quickly switch back and forth between them. "It eliminates a lot of the 'garbage' time," says John Young. "If you have a debugging session already set up and waiting, it makes a programming job about 50 percent easier. You can be on TSO on one session, review a compilation on another session, and actually test it online on another. It has raised our programmer productivity 100 percent."

Documentation is a chore that most

programmers dislike. That makes documentation an excellent candidate for automation, and there are several systems on the market. They range from boilerplate editors, which let a programmer quickly assemble most of a document from a library of stock paragraphs, to documentation generators, which accept the program as input and generate most or all of the documentation. Many program generators have some form of automatic-documentation generator as part of the package.

Ultimately, programming as we know it may disappear entirely. One of the main goals of the Japanese Fifth Generation computer project is to produce a computer that can be given instructions in a natural language to produce programs. There is a good deal of skepticism about the ability of the Japanese to meet the ambitious goals they have set for the project, and the concept of the self-programming computer may well outlive the Fifth Generation project. In this country, Lisp, a high-level language, is being touted as the key to natural-language programming.

But programming is more than a method of feeding coded instructions into a computer. It's a formal way of organizing thoughts and focusing on goals. The need for programming languages to instruct computers may disappear, but the need for something like them as a method of defining problems and goals is unlikely to ever go away. □

Rick Cook is a free-lance writer based in Phoenix, AZ.

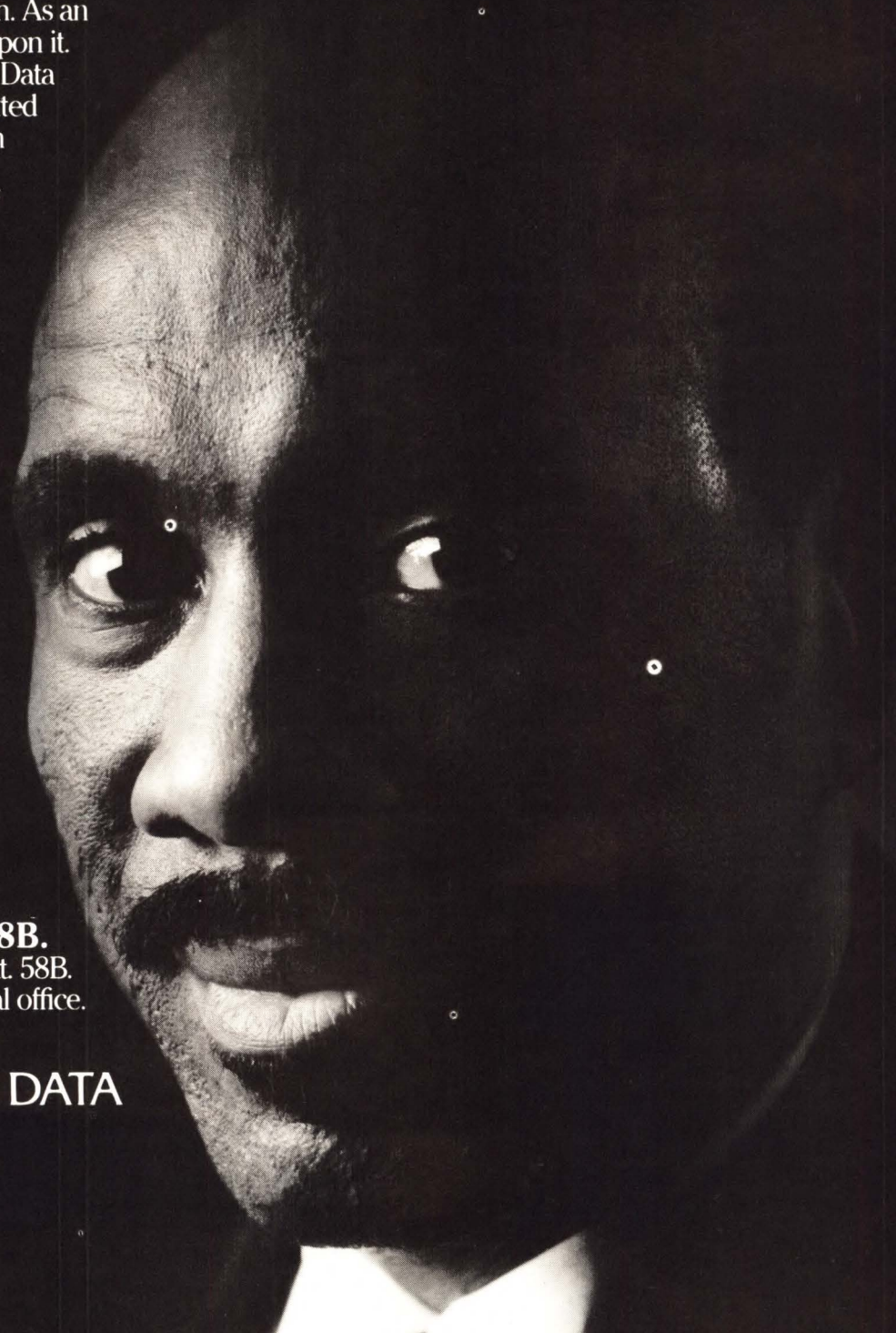
PROGRAMMING TOOLS

Generators/development systems

Vendor	Package	Requirements	Price	Circle
Aims Plus (512) 385-0702	Aims	IBM PC, PC XT, PC AT; Wang 2200	\$195 \$10,000	401
Analysts Int'l. (612) 835-2330	Corvet	IBM 4341 and up; Data General MV/4000 and up	\$95,000	402
Applied Data Research (201) 874-9000	Ideal	IBM mainframes	\$89,000/OS \$66,500/DOS	403
Bytel (415) 527-1157	Cogen	Several micros and minis	\$950 to \$7,500	404
Century Analysis (415) 680-7800	Impact 6	NCR mainframes	\$29,500	405

(Continued on page 136)

"One thing I'm sure of: all my engineers hate computer downtime as much as you do."



"Whether it's IBM, DEC or Control Data equipment, our primary service goal is to hold downtime to a minimum. As an Engineer-in-Charge, I insist upon it.

As a result, every Control Data customer engineer is committed to keeping your equipment in peak operating condition. It shows in the thoroughness of our scheduled preventive maintenance—where we'll diagnose and eliminate problems *before* downtime can result. And it shows in our quick response—and quick solutions—if troubles do occur.

Our engineers are thoroughly trained on all equipment—even multi-vendor equipment. So when you have a contract with us, you *know* we're capable of servicing your equipment. With professionalism. And with a 26-year track record behind us.

Call Control Data Engineering Services. We hate downtime. So we won't let you down."

1-800-828-8001 ext. 58B.

In Minnesota 612/921-4400 ext. 58B.

Outside the U.S. call your local office.

 **CONTROL DATA**

DP SECURITY: A DELICATE BALANCE

Controlling access to dp facilities requires a balancing act between protecting vital resources and enhancing employee productivity. You can't just lock the doors.

by James Miskiewicz

Access control, the linchpin of data-center security, is far more complex than throwing up a chain-link fence, locking the doors, and calling in corporate security.

Securing a data center is a delicate balancing act between providing protection and enhancing productivity. Measures adopted to keep intruders out shouldn't impede employees as they go about their jobs; security systems must be sophisticated enough to catch insiders who become interlopers without imposing draconian restrictions. After all, burdensome security provisions tend to be ignored or circumvented by busy employees.

The high value of information and

computer equipment, the threat of computer crime and sabotage, and the spread of devices to combat them is creating a growing need for MIS/dp executives who understand the fundamentals of security and play active roles in the development and enforcement of a security program. These executives help deploy two basic kinds of access-control systems: those that detect intrusion and alert the responsible managers, and those that stop an intruder from gaining access to the data center or prevent employees from entering off-limits areas.

In major corporations the approaches may differ, but the thrust is the same. Limit the number of employees

Photo by Ted Hardin



with access to the data center and the risk of loss or damage will be greatly reduced. For example, programmers working at terminals don't have to go inside the data center; they can work miles away, out of harm's way. If an employee must deliver a report or tape to the data center, he or she can deliver it to a double-doored locker or drop slot without entering the data center. At the Basking Ridge, NJ, data center of Purolater Courier, only a few top managers have keys to the computer room, which is always locked. The mainframes are controlled from a room one floor below the computer room, and access to the control room is restricted to operators.

Security consultants generally advise using redundant security systems. The most frequently promoted concept is layered security systems. Working from outside to inside, the most sensitive areas, such as the machine room or tape library, are accorded the tightest security.

"I tend to use the word 'holistic,'" says Richard Bessenhoffer of Total Assets Protection, an Arlington, TX, consultancy. "A security system can't counter a single problem; it's got to be all-encompassing." According to Bessenhoffer, the layers of security might be categorized most easily into four perimeters, each employing one or more security devices. These perimeters include the area immediately surrounding the building (assuming that yours is a stand-alone center); the perimeter of the building itself, including all possible access points; the entrance to the data center; and finally, areas within the center that are most sensitive and in need of the greatest control.

Systems installed at the outer perimeter generally fall into the surveillance category. Increasingly, data centers are employing some form of motion detection, either infrared or microwave, to alert security to an intrusion at the outer perimeter. Both systems work

"point-to-point." A transmitter beams invisible infrared light or an energy field along each side of the perimeter to detectors at the other end. An alarm is set off by any break or disruption in the beam by a "human-sized" object; birds or small animals are detected by the beam but won't trigger the alarm.

Microwave systems, such as GTE's MPS 400, list at \$1,530 per unit (one receiver and transmitter), while infrared systems tend to be less expensive. The Admemco 1290 costs about \$500 per unit. However, the major cost of these systems is installation. According to Bill Boyd, technical-services manager for GTE Security Products Organization, Mountain View, CA, the cost of installing a motion-detection system can be as much as three times the purchase price of the unit itself.

Both systems have strengths and weaknesses. The microwave system transmits a much wider energy beam and can protect much larger areas than the infrared system; the narrow infrared beam, which is transmitted to a photoelectric cell, is less prone to false alarms. In addition, microwaves can be transmitted 600 feet or farther, while the infrared beam is only effective up to 500 feet.

Motion-detection devices also fit well into what is becoming an increasingly held belief among security experts that data centers and their outer security perimeters should remain as unobtrusive as possible. Thus, one of the oldest forms of access control, the chain-link fence, is fading quickly from most data-center security provisions. The U.S. Department of Justice's report "Computer Security Techniques" contends that "an obvious barrier may attract undesirable attention" and that computer facilities should "look unimpressive and ordinary relative to nearby buildings." The report is available by calling the U.S. Department of Justice's Bureau of Statistics in Washington, at (202) 724-7774.

"Data centers should look unobtrusive, so as not to attract undesirable attention."

The central data center for Martin Marietta Data Systems in Orlando, FL, uses a motion-detection device for perimeter security. As a defense contractor and dp-services supplier, Martin Marietta requires strict security precautions for its data center.

The level at which pure access control begins is at the entrances to the building or the floor on which the data center is housed. Identify all access points leading to the floor or building and eliminate as many as possible from the normal flow of traffic.

"If you allow employees and visitors to enter the building through many entrances, you're asking for trouble," says Earl Gay of the New York-based security consultancy Brooks-Gay Associates. "Ideally, you'll be able to restrict movement to one or two access points and then control who gets through and how."

The "and how" is as important a feature of the access-control program as any particular security device. Establish access control at the front entrance, loading zones, and such secondary access points as emergency exits. Establish procedures regarding the use of each entry point. Required emergency exits, for example, which lead out of the data-center floor should remain unopenable from the outside. In addition, many security consultants advise establishing rules preventing employees from using emergency routes to move to and from the data center, and tying restricted exits into the central alarm system.

Similarly, the front or main entrance of the data center should include a reception post, the sole function of which should be to identify employees and visitors and log their arrivals and departures. In instances where the actual entrance to the data-center complex is separate from the main entrance, a

"Eliminate the normal flow of traffic as much as possible from access points leading to the data center."

Are you still waiting for air?

Your new DP facility is complete, computers ready to hum. But the air conditioning system you ordered twelve weeks ago still hasn't been shipped! It's an all too common and, frustrating occurrence.

Well, we're Data Aire, and we're doing something about it!

We'll ship the *exact* computer air conditioning system you specify, in three weeks.* And, it won't be some compromised substitute from stock, but a system which truly fits your needs.

Data Aire's line is among the industry's most complete. From the largest main frame systems to ceiling-mounted spot coolers, we offer more options, accessories and custom features. Each system is engineered, built and tested to the highest standards in the field. And, Data Aire is the leader in innovation too.

Multi-compressor design in large units, micro-processor controls, the exclusive Mini 2000—a free-standing unit for mini centers—are just some of the new things you'd expect from the pioneer in computer room air conditioning. (Remember, Data Aire designed and built the first true computer room air conditioning system more than 25 years ago.)

So, if you're still waiting for air, or if you just want more information, call us. We're Data Aire, and we'll deliver.



DATA AIRE INC.
7442 ORANGEWOOD AVE.
GARDEN GROVE, CA 92641
714-891-3471

A MEMBER OF THE CSGROUP OF COMPANIES

Data Aire delivers!

*Certain units—about two percent of our production—may require four weeks. Check with factory.

CIRCLE 54



ACCESS CONTROL

second reception post should be established. Although it is common for many reception desks to be equipped with closed-circuit television monitors, Bessenhoffer asserts that these monitors can distract guards from their primary responsibility.

"Once you start placing other responsibilities on the guard, access control begins to break down," says Bessenhoffer. "Plus, it just doesn't make good business sense to install \$100,000 worth of TV cameras and monitors when they're only being watched half the time." Rather than install TV monitors at your reception desk, Bessenhoffer suggests that they be placed in a central security office—under the gaze of trained security personnel given the sole responsibility for their monitoring.

So-called back-door access points,

such as loading docks and freight elevators, must also be secured. However, because these areas require efficient movement of materials in and out of the building, access-control measures must not impede legitimate movement.

"The loading area is a threat not so much because someone is going to walk off with your mainframe, but because someone wanting to steal a disk or sign on to a terminal is just as likely to use the back door," says Benjamin Klein, director of user services for the City University of New York's computer center.

Klein asserts that the need for efficient movement through loading areas usually comes at the expense of security. The solution at the CUNY computer center was to route all deliveries through the reception area used by data-center personnel. Unfortunately,

not all centers are designed to allow this. If the loading dock is behind the data center, security consultants advise the use of some dual-checking system to allow equipment and materials to move in and out of the building.

At the very least, experts advise, delivery personnel should be denied access beyond the loading dock. Therefore, it makes sense to build a storage room for needed media and other materials near the loading dock. Materials might also be left at the dock, to be moved by data-center personnel only. Some corporations, such as Martin Marietta Data, deploy an "air lock." A delivery truck is admitted to an enclosed area where the truck, its cargo, and occupants are closely examined prior to admittance to the loading dock. The vehicle is also checked after the transaction is complete. The system restricts access but provides for the efficient movement of equipment and materials in a secure manner, says Charles M. Elliott, director of quality assurance and security.

Inside the data center, the security perimeters should follow the form of individual rooms and workstation clusters. Security experts recommend laying out work areas to provide security for sensitive offices. Says Earl Gay, "You shouldn't have to stroll past the tape library every time you want to go to the washroom."

The workhorse of interior access control is the locking device. Years ago, these devices were no more than \$500 electronic locks with numeric keypads activated by a multi-digit code. In recent years, however, magnetic- and infrared-card readers have all but replaced the older locks. These systems are more expensive, ranging from \$1,000 to \$3,000 per door, plus installation costs, which can run as high as 30 percent of the system's purchase price. Yet they have become the industry standard for two essential reasons. First, the "combinations" for digital locks can easily fall into the wrong hands, but the combinations on cards are hidden. Second, most systems provide central programming and auditing through hookups to stand-alone computer systems.

"One of the basic concepts about ac-

WHODUNIT?

Type of employee

Percentage of computer crimes

Executives/managers
not involved with computers

21

Computer-operations supervisors

22

Computer operators

42

Programmers

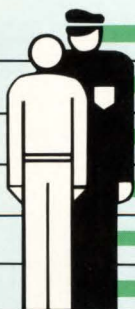
67

Non-dp staffers

40

Other

18



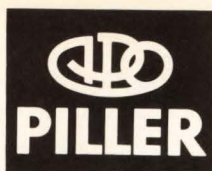
Source: Task Force on Computer Crime/American Bar Association

In recent months, the bulk of attention paid to computer crime has been on so-called "hackers." These electronic thieves—working from remote terminals—do present a serious threat to data centers, but one recent survey conducted by the American Bar Association suggests that an even greater threat to security comes from much closer to home.

When asked to identify known perpetrators of crimes against them, 125 of 160 respondents (77 percent) said criminals came from within their own organizations. The most frequently cited groups were computer operators and programmers.

"Hackers have received all the publicity, but the greatest threat by far still comes from individuals who work in the data center," says Richard Bessenhoffer, vice president of Total Assets Protection, an Arlington, TX, consultancy.

The survey questionnaire was distributed to Fortune 500 industrials and to federal, state, and local government agencies. The 179 respondents fielded questions ranging from estimates on total annual losses due to computer crime in the United States, to views on the need for a federal statute on the punishment of computer criminals; 79 percent favored such a law.



UNIBLOCK

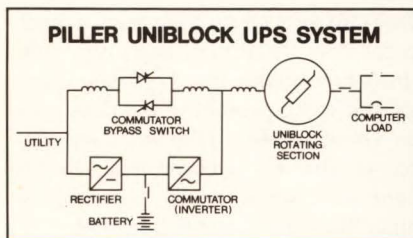
...the most advanced UPS system ever designed!

Even before its formal introduction, the new Piller UNIBLOCK Uninterruptible Power System (UPS) was already being installed at major telephone, television, and telecommunications installations, banks and financial institutions, data services companies, and automated manufacturing installations worldwide!

A state-of-the-art breakthrough

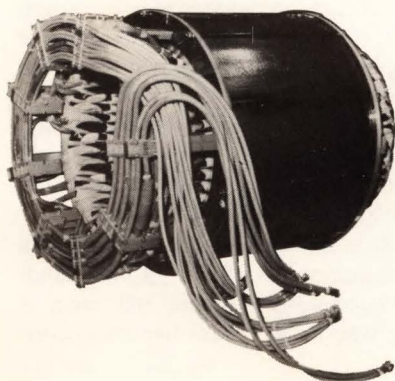
$$1 \text{ STATIC UPS} + 1 \text{ STATIC UPS} = 1 \text{ UNIBLOCK UPS}$$

The Piller UNIBLOCK is the first UPS system that offers dual power paths, each capable of supplying full rated power to the computer. That means built-in redundancy in a single module. (So a single UNIBLOCK UPS System provides the same protection as two static UPS systems!)

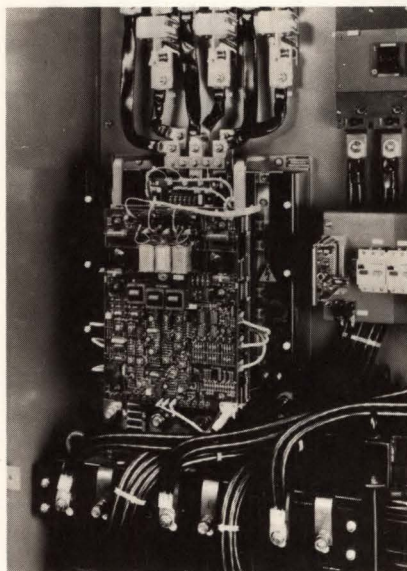


Superior efficiency

It's the first rotary UPS to offer efficiency equal to and even superior to that of static UPS



systems. (No other rotary-based UPS even comes close!) That's the result of the exclusive Piller rotating power conditioner...the first ever to combine primary (motor) and secondary (generator) windings on a single stator with a common rotor.



Superior reliability

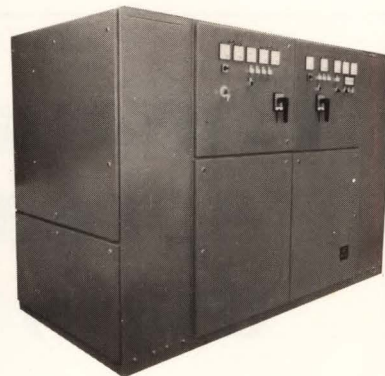
It's the only UPS system to offer four times the reliability of a static UPS system. (The UNIBLOCK's simple commutator (inverter) is only a fraction of the size of a static UPS inverter and has only 25% the parts count!)

Total power protection/plus system flexibility

It's the only UPS system to offer up to 100ms ride-through, plus complete isolation of the load from the utility, and protection against voltage spikes, voltage

sags, brownouts, even without a battery.

The right system for your power requirements



It's the only UPS system available in KVA ratings to cover the entire range of mainframe power requirements from 40 to 500 KVA...plus an off-line battery, constant-voltage battery charger, automatic bypass switching, power distribution system, and diesel-electric emergency power generation capability...all from a single source!

Nationwide maintenance and service

And it's offered with a 24-hour-a-day, 365 days-a-year nationwide service agreement from K/W Control Systems, Inc., the leading supplier of power systems for computers, with more than 3,000 systems installed coast-to-coast.

Now there's UNIBLOCK, so you won't have to worry about lightning and thunder.

No wonder we're taking the UPS market by storm!



CONTROL SYSTEMS, INC.

South Plank Road, Middletown, New York 10940
Phone: (914) 355-6741 TELEX No. 13-7428

cess control is that not everyone in the organization should have access to every part of the data center. Upper management may have unlimited access, but as you move down the organizational chart, access should be more selective, defined by individual workstations if possible," says CUNY's

Klein. CUNY's computer center separates low-security offices from more sensitive areas, such as terminal rooms and the computer room.

One clear example of this type of compartmentalization is the data center for the Fisher-Camuto Co., a fast-growing women's-footwear manufac-

turer and retailer in Stamford, CT. According to Ken Scharf, MIS/dp vice president, entry to the data center is restricted by a magnetic card reader from Card Key Systems (Chatsworth, CA). Within the center, the card-reader system's programming establishes security levels that restrict employee movements according to individual needs to enter certain areas.

Scharf explains that although administrative offices are open to employees with appropriate identification cards, programming areas are restricted at night to programmers on the night shift. Access to the computer room itself is restricted at all times to operators. The computer room is glass-enclosed, but employees may communicate with each other using an intercom built into the center's telephone system. An operator may leave the computer room to deliver a job, but programmers and managers cannot go in.

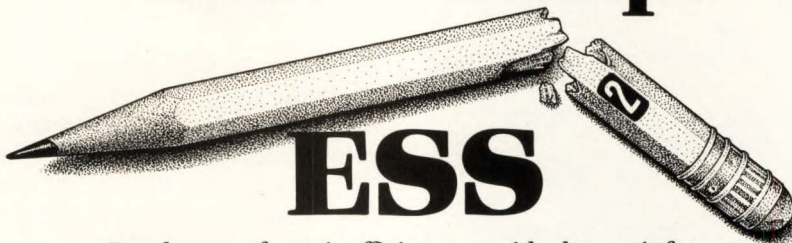
The software available for most card-activated systems provides flexibility by matching an individual's access code against a database. Systems can control as many as 40 access points and track as many as several hundred thousand employees' access codes. They can also be programmed to limit access only to certain doors and only during times when the employee is authorized to be present in the data center. These systems generally keep records of who was present when, in the event that some crime or sabotage within the data center is detected.

But card readers are not foolproof. Magnetic cards can be duplicated. And while easier to use than the digital lock, the need to either inject a card or flash one past a reader is regarded by many employees as an inconvenience. When that occurs, employees may be tempted to circumvent the security measures simply to make their lives easier. One MIS/dp manager, who prefers not to be named, says he found that in certain high-traffic areas employees simply propped a chair against the door, defeating the access-control system.

Ultrasophisticated detectors such as voice-activated, fingerprint, or handwriting-analysis systems still have a long way to go before becoming cost-

(Continued on page 114)

The mainframe spreadsheet that's a snap!



Break away from inefficiency—with the mainframe spreadsheet that's a snap. ESS.

ESS is easy to use. And easy to install.

ESS provides spreadsheet support for IBM mainframes running VM/CMS or MVS/TSO.

Now you can provide advanced spreadsheet capabilities to ten—or ten thousand users.

ESS is a fast, powerful spreadsheet that's as big as your mainframe. Spreadsheet size is limited only by your mainframe's capacity. It easily handles thousands of rows and columns.

ESS is compatible with Lotus 1-2-3 and VisiCalc. Anyone familiar with these spreadsheets can be using ESS in minutes.

And ESS has hundreds of features to support the most sophisticated applications. Macro support. Online HELP. Hotline. Unlimited windows. Interactive graphics.

There's virtually no end to what ESS can do.

Give your people mainframe spreadsheet power at micro costs.

Call us today. Ask about our 30 day free trial.



TRAX Softworks Inc.
10801 National Boulevard
Los Angeles, California 90064
213-475-TRAX TLX 350048

Trademark acknowledgement: IBM, International Business Machines; Lotus 1-2-3, Lotus Development Corporation; VisiCalc, VisiCorp.



Photo: Ron Kimball

UNCOMMON

The white tiger: an uncommon blend of beauty and strength. It is known for its keen sensory perception and quickness as well as its unique appearance, just as Graham computer tape products are recognized for unique performance in addition to unerring accuracy.

Graham computer tape's unique patented binder system has superior adhesion/cohesion characteristics which reduce oxide shedding and debris-caused errors.



Graham Magnetics

Graham Magnetics Incorporated
Subsidiary of Carlisle Corporation
6625 Industrial Park Boulevard
North Richland Hills, Texas 76118

CARLISLE

1-800-433-8006, TWX 910-893-5010, TELEX 6829068 GRAFW

Graham Magnetics' commitment is long term: to provide premium-quality permanent computer tape products to data processing managers worldwide. You know your data is a corporate asset worth protecting with the highest-quality, problem-free computer tape in the world. So if you're tired of "bargain" tapes with untimely, costly problems, call Graham.

Graham Magnetics: making sure that high-quality permanent magnetic media never becomes an endangered species.

When the question of disaster recovery comes up, why does everyone look to Comdisco?

Data Center
Manager

Communications
Manager

Risk
Manager

CFO



Leadership, pure and simple. That's why over 450 corporations have turned to Comdisco Disaster Recovery Services, Inc., for professional disaster recovery solutions. CDRS will work arm-in-arm with every member of your management team to develop a workable disaster recovery capability. We can guide you through the development of your own plan, offer alternate site protection, and devise a workable strategy for even the most complex requirements. Most importantly, CDRS can help you integrate intelligent disaster recovery procedures into your organization without disruption of your regular business routine.

From contingency plan testing...to data communications...to a network of nine fully equipped hotsites nationwide, CDRS serves the broadest range of customer requirements. Each CDRS hotsite features IBM CPUs, ranging from 4300 thru 3084 technology. The communications capabilities of CDRS have set today's standard for network back-up with ACCUNET® Reserved 1.5 Service from AT&T Communications providing the foundation.

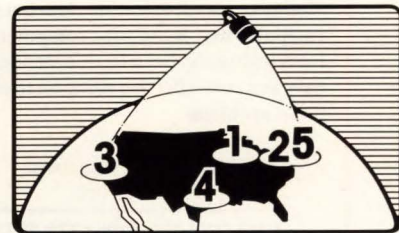
Whatever your processing environment, CDRS has a cohesive service and support structure for maximizing disaster preparedness. Our success in supporting customers during actual disaster situations is solid testimony to the viability of our services and our leadership. We invite you to take a closer look at our capabilities...and take the first step toward putting the world's leading disaster recovery resource to work for you.

**V.P. of
MIS**

Comdisco Disaster Recovery Services, Inc.
6400 Shafer Court, Rosemont, IL 60018
312/698-3000

**Disaster
Recovery
Coordinator**

CEO



comdisco®
Comdisco Disaster Recovery Services, Inc.

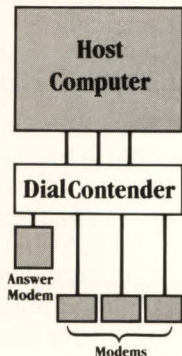
CIRCLE 58

COMPUTER PLAYING HARD-TO-GET?

If authorized computer users can't get past busy signals into your computer system, they get frustrated. Now you can eliminate their frustration and complaints with the DialContender. At the same time, you'll be making your computer completely safe from intruders.

Here's how it works:

Authorized users call your computer for an open port. The call is received by the DialContender. If a port is free, the user enters his ID and password, and hangs up. The DialContender verifies the information, calls the phone number that matches the ID and password, and connects the user to a free port. (As you can see, no unauthorized users can get past this double-check routine into your system.)



If all ports are in use when a call comes in, the DialContender will ask the user if he wishes to be placed in a queue for a call back. As soon as a port is free, the DialContender will call the user back and connect him to the computer.

EASY, EXPANDABLE.

The multi-port DialContender is easy to install between your host computer and auto-dial modems with no changes to existing software.

It is configured for four modems, (one of which is the incoming Answer Modem), and serves three computer ports. Additional DialContenders can be installed to accommodate any number of computer ports. An optional parallel printer port provides an audit trail of user activity.

The DialContender Plus (\$1545), stores user ID/passwords and phone numbers, validates and calls back. If you only require phone number validation with call back capabilities, ask for the standard DialContender (\$1395).

Minimize user frustration. Maximize computer use. Make your computer safe from intruders. Get a DialContender, the easy and cost-effective solution to all of these problems.

To Receive More Information
Or Place An Order

CALL COLLECT: (408) 279-8711

A subsidiary of Astronautics Corporation of America
1440 Koll Circle, San Jose, CA 95112

Backus
DATA SYSTEMS, INC.

CIRCLE 59

ACCESS CONTROL

(Continued from page 110)

effective for all but the tightest security facilities. Also the technology to make these systems cost-effective has not yet been developed. Voice-analysis systems, for example, currently require the installation of a soundproof booth and special voice-transmission lines at every door.

However, significant developments have been made in systems that require a minimum of physical effort on the part of the user. The so-called "handless" systems, according to security consultants, are the first to address the problem of making the access-control system easy to use.

One such device available is the Proximity System developed by the Schlage Electronics Corp., a big lock vendor based in San Francisco. The system, which costs approximately \$1,500 per door, plus installation, combines all the central programming capabilities of the typical card-activated system with an ultrasensitive reader that requires an employee only to hold the card two to three inches from the sensing device. Although not a purely "handless" system, the Proximity System doesn't require the user to insert an access card, which can remain in a wallet or clipped onto the user in the form of a security badge.

In addition, the system's sensing device can be embedded within a wall, leaving no evidence of its presence. Not only does that make the system more aesthetically pleasing, says the manufacturer, but it also adds an extra measure of security because an intruder might not be able to find the sensor, assuming he or she has stolen some employee's card.

Another "no-hands" device is the Mastiff Security System, from Atlanta-based Mastiff Systems U.S. Inc., which combines good access control with convenience for the user. Mastiff, which is an acronym for Modular Automated System to Identify Friend from Foe, uses a radio transmitting device and receiver to activate the locking system. A specially coded frequency is transmitted by a 3.2-ounce "token" worn by personnel during working hours. The device has a range of four feet and provides an audit trail. If the wearer of a

"Access-control measures must not impede legitimate movement."

card is out of range of the receiver, an alarm will sound if the door remains open for more than nine seconds.

But because of the system's special installation requirements, such as the need for raised floors around the door to house the system's radio-receiving antenna, Mastiff concedes that its product may still be limited to certain applications rather than as the primary automated-locking system. The system costs from \$5,000 to \$10,000 per door, which makes it a significantly larger investment than card-reader systems made by Continental Instruments, Card Key, and Rusco. However, the manufacturer asserts that the Mastiff system can be cost-effective in data centers with high-security needs and heavy user traffic.

Trusted employees circumventing access-control measures, either to commit a crime or simply to avoid an inconvenience, are another type of problem. There's no technology that will solve that problem. Also, MIS/dp management, rather than the security staff, is best equipped to cope. Security directors will more often than not contend that their special training and expertise make them the obvious choice for the planning and management of security programs throughout the organization.

"Under most corporate structures, the corporate security department is responsible for protecting the assets of the organization. Information is every bit as much an asset as people and physical property, but because it is best understood by MIS/dp management, a dedicated MIS/dp approach to the security of information is advisable," says Martin Marietta Data's Charles Elliott.

The proponents for MIS/dp control of security point out that the unique nature of computer operations makes it difficult for non-dp professionals to understand the security needs of the data

(Continued on page 140)

Charles P. Pisciotta
Director, Marketing & Sales

"With Transtech's Data Security Services, They'd Be Back In Business Before The Smoke Clears."

AT&T American Transtech's Data Security Services provides secure, offsite storage to protect your irreplaceable computer data and ensure a fast, accurate recovery from any disaster.

Transtech's bonded, security-cleared personnel will pick up and deliver within three hours to provide swift disaster recovery access to your data. All data is transported in custom-designed, unmarked vans. And our Record Archival Management System (RAMS) offers tape maintenance, cleaning and retensioning on a regular basis while your data is in storage.

All your essential data files are safely stored in specially designed, hardened

underground facilities strategically located throughout the United States. Each facility has 24-hour security with vaulted, limited-access storage. Backup critical systems ensure air and water

supplies and total environmental controls. Redundant Halon systems further guard the safety of your data tapes and microfilm/fiche records.

Transtech is a leader in full-service data protection in secure facilities that conform to ANSI, UL, IRS, NMA/AIIM, NBS and NFPA standards. Our Disaster Recovery and Security experts can offer the consultation and advice you need to create a customized plan that gives you maximum security and recovery capability.

Data Security is just one of the services of Transtech. We also provide high

quality Shareowner Services, Direct Marketing Services and Financial Record-keeping Services using the latest technology and systems.

Transtech brings the experience and integrity of AT&T to Data Security Services. For details call Charles P. Pisciotta toll free 1-800-447-0012, or write: AT&T American Transtech, Data Security Services, 2600 Maitland Center Parkway, Maitland, Florida 32751.



MAY THE POWER BE WITH YOU

Part II: When power problems plague microcomputer systems, they can cost time and effort—and for high-level users, those are expensive commodities.

by David Morrison

For years, MGA Computer Services, a small data-processing outfit high atop a mountain in Resaca, GA, has put its trust in the Almighty to protect its personal computers against power mishaps. And for years, MGA has avoided power problems. But that may be due to more than luck; MGA is an arm of the Monastery of the Glorious Ascension. Those of us with merely mortal connections may need more than faith to protect against spreadsheet-killing surges and worse.

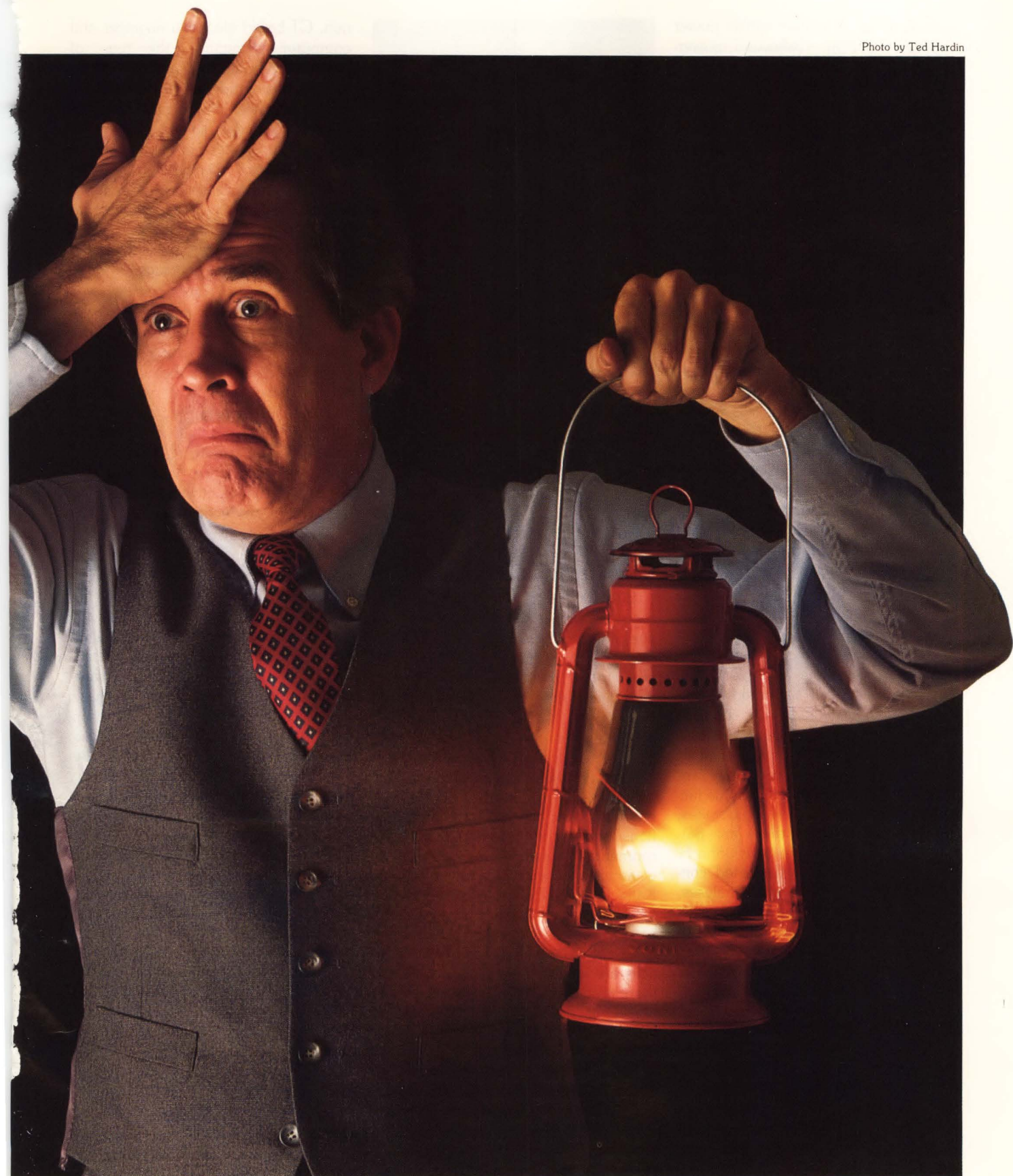
Power-line pollution problems are so unpredictable, they are almost impossible to diagnose. An unexplained disturbance on a computer screen may be correctable with a keystroke, but it may also portend more serious trouble. Left unattended, a seemingly benign symptom can escalate into a morass of

problems that force an organization to spend a disproportionate amount of money to solve.

A series of delays and much expense were Jim Keffer's experience at Denton, TX-based Tri Steel Structures when a power failure caused the read/write head on the hard-disk drive of his Intertec Personal Computer to crash. According to Keffer, who, at the time, was president of the steel-housing manufacturer, it cost \$450 to repair the equipment. "But for the two weeks it took for repairs and the six weeks it took to reconstruct the data, I didn't know anything about my accounts receivable or accounts payable," he says. "For two months I didn't know my bank balance. It's possible that the \$450 worth of damage actually cost us \$10,000." Keffer, now president of Para Systems, a Richardson, TX-based



Photo by Ted Hardin



manufacturer of uninterruptible power supplies (UPS), believes power-disturbance problems can't be solved by one simple solution.

Part of the reason that there is no hard-and-fast rule is because power problems vary. Among the deviations from clean electrical power—power that flows evenly at between 105 volts and 130 volts—that can damage equipment and data are black- and brownouts, electromagnetic interference (EMI) or radio-frequency interference (RFI), and voltage transients, such as surges, sags, and spikes. Although these disturbances won't occur everyday, says Michael Webster, an architectural engineer and office-environment specialist for Steelcase Inc., "Users should consider the loss a single malfunction could cause, then decide whether they can afford the risk." So commonplace have microcomputer power problems become in the offices of its customers, according to Webster, that the Grand Rapids, MI-based office-furniture manufacturer is now offering a power-line conditioner as part of its modular office-system electrical panel.

The first step managers need to take when they suspect power problems is to determine the exact nature of the pollution. Power-line analyzers and monitors, which can be rented or purchased, will yield the specific information required for an accurate diagnosis. Some provide printouts, which can be extremely helpful if problems are chronic rather than sporadic. Some factors to consider are when sags, spikes, or surges occur or if there are patterns of voltage change. Says John F. Kalbach, an Altadena, CA-based consultant, "If managers do initial analyses, they won't waste money on devices they don't need or that aren't appropriate for their power problems."

Kalbach and many other consultants point out that a detailed plan will help managers avoid over- as well as underprotecting their organizations' microcomputers. According to Henry Petersohn, a Potomac, MD-based consultant, a detailed power-protection plan could be the most important document managers will ever have to write about the equipment for which they are responsible.



Such a plan should focus on the environment in which an organization's computer equipment is situated. Ingredients that contribute to power risk are the age of the structure housing the equipment, the condition of the structure's wiring, the neighbors in the building with whom power lines are shared (and the equipment they operate), the condition of the power sent from public utilities, and the history of regional brownouts and blackouts. In some locations, one of the most important environmental elements to consider is weather. It's not uncommon, says John Kalbach, for a thunderstorm in Miami to cause problems for a city-operated network in Jacksonville, about 350 miles north. And if an organization's offices are located near Orlando, where there is an average of 100 severe thunderstorms per year, it should take weather into account for all electrical-equipment purchases.

Once managers can delineate the environmental conditions that might prove harmful to their micros, they can begin to study their equipment's potential for failure under these conditions. According to Steven A. Ciarcia, a Ver-

non, CT-based electrical engineer and computer consultant, the type of personal-computer equipment an organization has determines how sensitive it will be to power-line pollution. "As the operating speed of digital equipment increases, its tolerance of power-line pollution lessens," Ciarcia says. "High-speed microprocessors and memory components are more susceptible to fast voltage transients. Disk drives and video-display terminals are more affected by lasting surges and sags."

If, as Ciarcia suggests, certain power-pollution risks are endemic to particular types of equipment, why aren't more manufacturers building protective devices into their equipment or improving those that are already built in? By claiming they cannot provide built-in devices that will accommodate the wide variety of power problems users experience, microcomputer-equipment manufacturers are keeping the costs of production down.

There is another reason. According to David Simpson, president of Electronic Protection Devices Inc. in Waltham, MA, "Users have come to believe that power-protection devices are accessories and peripherals they need to buy. As a result, there is less incentive for manufacturers to build in safeguards." Before managers purchase power-protection devices, Simpson adds, it's important that they know exactly what kind of device has already been built into their equipment so they don't end up with costly replications.

Once managers have a clear sense of how well their micros can endure power problems, they can determine what additional protective devices are necessary. Simply protecting micros against surges and spikes could cost as little as \$10 per computer for elementary surge suppressors or noise-filtering devices. Line conditioners, which smooth out power, might range from \$100 to several thousand dollars. And UPS units, which keep microcomputers alive and well during power outages, range from several hundred to several thousand dollars, depending on the duration of protection required.

Managers can ask themselves some general questions both to help them decide which type of device is right for

their equipment and to clarify what it is they wish to protect. For example, is protecting equipment from damage due to voltage transients or long-term power failures as important as ensuring against data loss? What is the value of the data stored? Do production deadlines frequently coincide with peak-load demands on public utilities that could shut down operations? What would be the cost of downtime and loss of data in terms of users' morale? What would it cost to repair or replace damaged equipment and circuitry?

"Maybe you can get a hard disk fixed a lot cheaper than it costs to buy a UPS," says Dave Harper, a senior associate at the (Mechanicsburg, PA) office of CACI Inc., the Arlington, VA-based manufacturer of barcode inventory-management systems and software. "But what price can be placed on lost data? How is the morale of employees who have put a lot of effort into their work affected when they have to start over? And what value do managers place on how foolish they feel because they were told to protect their systems and didn't?"

Although there is no fail-safe method for protecting microcomputers from dirty power, there are several schools of thought: Protect each unit separately; protect a multi-user system or file server; or mix different levels of protection for various components of the network. For stand-alone micros that are used by only one employee for personal-productivity tasks, surge suppressors would probably suffice. Multi-user-micros, which are in effect departmental minicomputers, need more protection than stand-alones because more users depend on them to do their jobs. For these machines, UPSs would probably suit the bill for orderly shutdowns. When stand-alone micros are tied to a local-area network, they still require surge suppressors, but the file server, which stores much of the data, would require a UPS. According to Henry Petersohn, there is an advantage to mixing levels of protection. "With that method, not every machine in the network has to have the same high level of protection," he says.

UPS units for personal computers range from about \$200 to about

do you know!

INFORMATION ABOUT SAVING YOUR ELECTRONIC EQUIPMENT

Your Data Processing Network is in Danger!



The danger is real. In a split second your entire system could be down. Or your data destroyed or thrown into error. It is a serious, costly problem that merits your careful consideration.

The Threat Abnormal voltage surges that occur on AC power lines and data lines are a major cause of misinformation and equipment failure in data processing networks. A study at IBM* identified voltage surges or transients as the cause of 88.5% of all line disturbances.



Problems manifest themselves in two ways: (1) As physical damage; obvious damage that could occur due to electrical storms, or less obvious random failures that occur more often than you might realize. (2) As misinformation; where the power surge is coupled into the equipment causing improper events to occur, such as data base corruption, erroneous indications, etc.

These problems are not new. But now more than ever, because of faster logic speeds and increased susceptibility of sensitive semiconductor devices, they must be eliminated.

The Cause Power line surges can have man-made or natural causes. Some of the man-made phenomena are predictable, others are not. However, almost all natural causes are unpredictable.

*Allen & Segall/IBM, 1974

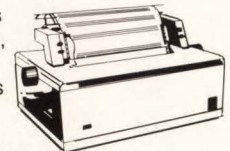
Examples of both include:

- lightning energies coupled into power transmission or data lines
- utility power correction activities
- power transmission line transfers and faults
- energizing and de-energizing transformers or heavy motors

The Solution MCG Electronics provides total protection against these serious threats to your entire data processing network, protecting AC power lines and data lines that serve all network equipment from mainframes and desktops, to terminals and printers, modems and instrumentation.

AC Power Line Protection

MCG's Surge-Master™ provides high speed (5ns), heavy-duty protection that limits AC overvoltage spikes to safe levels. Surge-Master



protectors are your first line of defense, and are available in configurations designed to meet your needs, from complete building protection to individual equipment protection.

Data Line Protection

Interfaced between network equipment and data lines, MCG's Data Line Protectors provide a sophisticated blend of high speed (less than 5ns) and brute force protection against induced transient voltage surges. MCG Data Line Protectors are designed to be used with coaxial cable, single or twisted pairs, RS-232, -422 and -423, 20 ma loops and video lines. Available in multiple configurations, they are designed to meet your every need. MCG protectors will keep your data processing network out of danger. They are truly your most



cost effective insurance against downtime and data loss caused by voltage surges and transients.

MCG
ELECTRONICS INC.

12 Burt Drive, Deer Park, NY 11729 • 516-586-5125

Specialists in Circuit Protectors, Transients, Lightning & Surges.

Call or write for our
FREE CATALOG



M I C R O S H I E L D S

\$15,000. Both online and standby units are for short-term use only. Even with battery enhancements, they provide just enough time to store data and shut down equipment in an orderly fashion. On the high end, online units, which pass power through from the electrical supply, keep systems operational for

considerable periods. EPS' Grizzly units, for example, which range in price from \$2,400 to \$5,000, deliver a steady 120-volt current for 12 to 15 minutes after power fails. Computer Power Inc. offers 120 minutes of 120-volt power with battery backups in packages that start at about \$1,700.

Standby units, which do not go into operation until after the power supply fails, are less expensive, but some do not always kick in fast enough to protect data. GPS Power Systems' 2-kilovolt-ampere standby Memorygard II UPS is designed for multi-user micro- and minicomputers. The standby unit has a four-millisecond switch-in time and voltage regulation, and supplies eight minutes of battery backup. The price starts at \$1,995, which is less than half the cost of GPS' 2-kVA online unit. This device supplies approximately 18 minutes of operating time without add-on battery packs.

EPS' 200-watt standby Grizzly, with surge protection built in, sells for \$895 and kicks in at less than eight milliseconds. Cuesta Systems Inc. offers a 200-watt unit for \$495 that has a slightly slower response time—eight milliseconds typically, but a maximum of 10 milliseconds. GPS' 200-watt unit sells for about \$595. The vendor claims this unit has the fastest response time of all—less than two milliseconds.

Just as important as fast response time, says Jim Keffer, is the level at which standby UPSs transfer the computer load back to the power line. Most standby units tend to cut in at the 102-volt to 108-volt range and transfer back in the 106-volt to 110-volt range. Both of the average transfer points are fairly close to the bottom range for clean power and the point at which the power supply might level off during a brownout. If voltage should by coincidence level out at the point at which the standby UPS engages or disengages, Keffer says, "the machine will either engage or disengage. It usually winds up switching on and off and eventually the switch will burn out." If that happens, the UPS will not function, leaving computer equipment and data open to considerable risk. The cut-in, cut-out range, Keffer says, should be sufficiently broad to assist the UPS in making the decision. With online UPS units, switch burnout is not a factor.

George Hurst, manager of the defraction-grating operation for precision instruments at Perkin-Elmer Corp. in Irvine, CA, says his employer depends on a constant flow of clean power to keep its Hewlett-Packard

**AT 10:30 A.M.,
A MINOR POWER SURGE ERASED \$370,000
FROM ACCOUNTS RECEIVABLE.
THE BOSS WAS NOT AMUSED.**

Every day, power failures and fluctuations cost users of business computers money. Because when power problems occur, even for a short period, valuable data may disappear from memory and be lost forever. Your best insurance against these costly power failures: The DEFENDER™, Computer Power Inc.'s portable uninterruptible power source for protection against any power emergency—surges, spikes, brownouts, and blackouts.

The DEFENDER is perfect for all micro and mini

computers, with the convenience features and flexibility you want in a lightweight, compact unit. Powerful sealed lead calcium batteries ensure up to 30 minutes' emergency running time—enough to download data into permanent storage before it's lost.



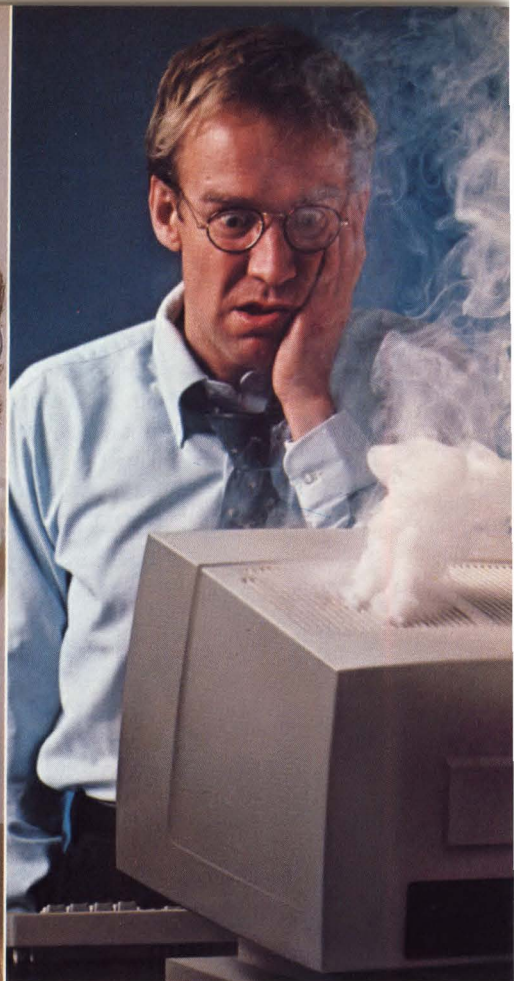
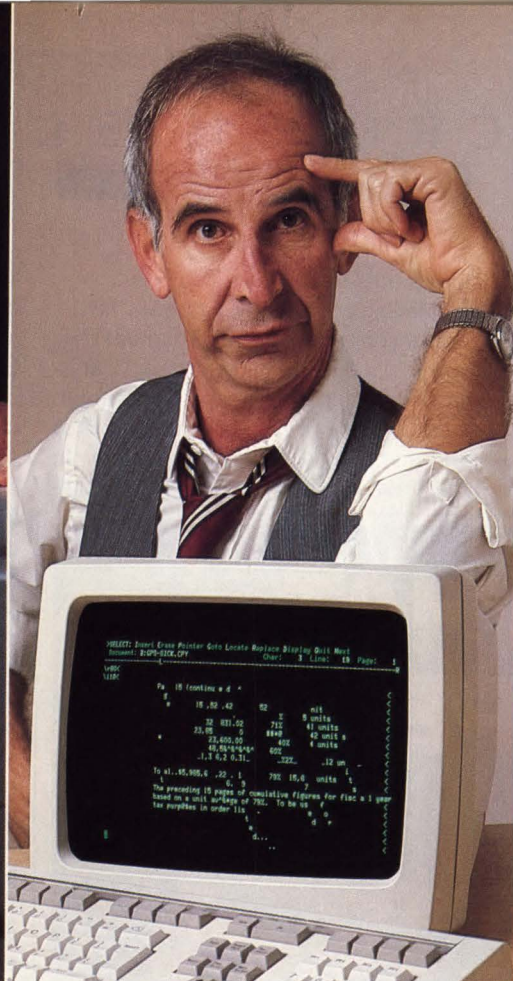
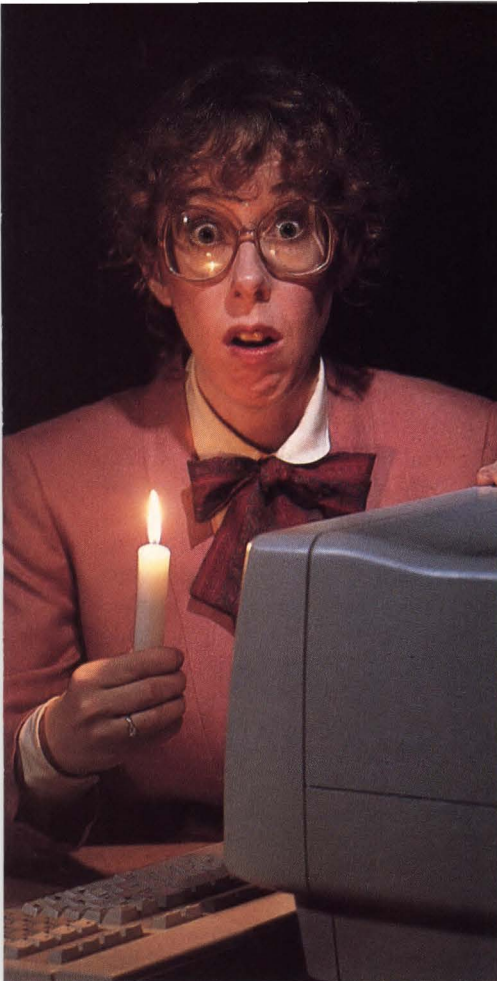
The streamlined, modular design and 5-ft. cord allow convenient placement in any office. Best of all, The DEFENDER is affordably priced—you get high-performance power protection in one cost-efficient system.

For information on The DEFENDER, your best defense against loss of data during variations in voltage, write or call today.

Your protection connection?

**COMPUTER
POWER INC.**

124 W. Main St., High Bridge, NJ 08829
USA • (201) 638-8000 • Telex: 847481



A. Once you're in the dark? B. During a total memory loss? C. After the smoke clears?

When is the right time to buy a UPS?

D. None of the above.

Don't wait for a power outage to blackout your vital system data—or high frequency noise to scramble your memory—or high line voltage or a sudden spike to blow your fuses or melt your wires!

The time to buy an uninterruptible power supply is now, before power problems cause inefficient, even catastrophic damage to your microprocessor-based installation. And the high-quality source for UPSs is General Power Systems, manufacturer of the industry's most complete line of uninterruptible power supplies.

GPS has the exact UPS you need to protect your data, your system and your production. On-line units range from 500VA to 50KVA and standby models from 100VA to 2KVA. Many features like battery backup, usually sold as extras, are standard on GPS models. Plus a wide range of options allows you to specify a virtually custom unit at an off-the-shelf price. In addition, GPS will tailor designs for OEM applications.

State-of-the-art operating characteristics of GPS systems give you the most for your money.



All-transistor technology, pioneered by GPS, means optimum reliability, control and ease of operation. Our on-line models are noted for their unusually fast transient response and excellent efficiency while standby units have set the industry standard with fast 2 millisecond transition time.

Equally important, UPSs from General Power Systems are manufactured to unmatched quality standards. In fact, all our UPSs for commercial users are designed, produced, tested and inspected to the same stringent standards as our parent company's line of defense products.

Your intelligent system is only as reliable as the power you put into it. Don't wait for a catastrophe. This is the time to call or write for full information. General Power Systems, 1400 N. Baxter St., Anaheim, CA 92806-1201, (714) 956-9321, (800)854-3469, in California (800) 824-8912, TELEX 182283.

GENERAL POWER SYSTEMS

A Division of ALS Corporation

See us at Booth #444  COMDEX/Spring '85

9825A, 9826, and 9836 microcomputers functioning accurately and efficiently. Perkin-Elmer uses microcomputers to control the scribing of optical measuring surfaces with a diamond-pointed tool at calibrations of up to 3,000 grooves per millimeter. Even a brief power failure, he says, would cost

thousands of dollars.

Having concluded that power failure was a chronic problem in southern California, Hurst says he considered installing a very expensive diesel generator to back up the Irvine operation. But a thorough study of power problems in the area disclosed that most of the out-

ages lasted only a half hour, a time short enough for a UPS to handle. As a result, Hurst says, he decided to install GPS' 2-kVA online Memorygard II UPS at a cost of \$5,000 to protect the HP micros from failure.

General Foods in White Plains, NY, also takes precautions with the IBM Personal Computers it uses in its operations around the country, says Gary A. Schnorr, manager of office automation and microsystems. "Anywhere that we cannot control the power supply, such as in a rented space, we install a protective device." Whenever possible, says Schnorr, he equips each machine with a dedicated power line and surge suppressor. If the micros experience spikes and surges caused by a neighboring corporation's equipment, Schnorr installs a Topaz standby UPS. "All we need is a protective device that will let us continue operations long enough to shut down without any loss of data. But even a UPS is not a fail-safe device. It doesn't replace good backup procedures," Schnorr says.

Other managers agree that UPSs do not offer complete protection against system damage. Says Ricci Anderson, vice president for technical strategies at Chase Manhattan Bank in New York, "I wouldn't completely depend on a UPS. It's no substitute for backing up data." At Chase Manhattan, which has approximately one personal computer for every 10 office employees, the in-house computer store stocks both UPSs and surge suppressors.

Unlike Perkin-Elmer, General Foods, and Chase Manhattan, the law firm of Goldberg, Evans & Katzman (Harrisburg, PA) decided to forgo power-protection devices for its Texas Instruments-based network, which is used for billing, accounting, word processing, and data communications. According to Thomas A. Stumpf, the administrator of the 14-partner firm, CSC Systems and Services, a Minneapolis-based consultancy and Herre Brothers, a local engineering firm, concluded that the potential for power-related problems had already been eliminated for several reasons: renovations that had been made to the building that houses the equipment; the built-in protection of the TMS 9900 processor, its two termi-

WHAT HAPPENED?

A disaster at your onsite computer operations could put your corporation in jeopardy. By the time you ask, "What happened?" it may be too late.

At CORPORATE CONTINGENCY SERVICES, we are prepared to get you prepared. With the most advanced IBM 4341 and 3083 mainframe computers, CCS provides the most complete computer back-up facilities available. Our consulting staff is ready to assist you in assessing your risk and developing an effective contingency plan.

For full details and a free brochure write or call Corporate Contingency Services.



CORPORATE CONTINGENCY SERVICES

P.O. BOX 805 • NEW HUDSON, MICHIGAN 48165 • (313) 486-2110

A division of Diversified Technologies, Inc., a subsidiary of Blue Cross and Blue Shield of Michigan

HOW TO CONTROL THE RISE AND FALL OF POWER.

Your small business computer can give you the power to raise your productivity. But first you have to control the power you give it. Because even the slightest dip or surge of electricity can result in a shocking surprise. An instant loss of important data or misinformation. Even worse, a total power line failure can create department devastation... a total system crash. You can't afford errors, delays and other problems. After all, you've invested in a computer to increase efficiency. But now there's a solution you can afford The Sola SPS. This economical, UL listed Standby Power System is designed to protect personal, micro and mini computers from AC line disturb-

ances and failures. Sola SPS provides clean, regulated AC power to your computer when your power line experiences irregular voltage. Line dips or line surges are immediately converted to proper voltage. When the AC line is present, the SPS filters power to eliminate electrical noise. And when the AC line fails, the SPS goes into full action, providing precise AC power to the load from its internal battery. So the only noise you'll hear is the sound of performance. There's no maintenance. No installation. No kidding. Just plug it in and turn it on. Why let your productivity rise and fall with your power? The solution is as simple as SPS. The standby system that Sola stands behind.



Write for free literature. 1717 Busse Hwy., Elk Grove Village, IL 60007 (312) 439-2800

CIRCLE 65

A UNIT OF GENERAL SIGNAL **SOLA**

nals and a separate TI dual-disk-drive personal computer; and dedicated circuits that had been installed for the system. Also, power failures in central Pennsylvania are rare occurrences, and a major component of the system is a Winchester WD-800 subsystem, which provides close to 50 megabytes of tape backup for data.

Is Goldberg, Evans & Katzman playing with fire? Some industry experts might think so. With no equivocation, John Graham, president of Computer Services Corp., a Birmingham, AL-based supplier of Wang and IBM PCs, says, "Users should protect each machine." David Simpson, at Electronic Protection Devices, says: "A dedicated power line may not do the entire job. I would still protect each machine." According to Michael Webster at Steelcase, "A dedicated power circuit is merely a wire. Wires do nothing to clean up power; they only distribute it. A dedicated circuit will distribute dirty power just like any other circuit." And, says Peter G. Diamond, marketing di-

"Users should consider the loss a single malfunction could cause, then decide whether they can afford the risk."

Webster, Steelcase

rector at Current Technology Inc., "We recommend that users protect all their micros from power-pollution problems." The Richardson, TX-based manufacturer sells the PC-10 power-conditioning unit for personal computers (\$369), as well as the MP Power Siftor (\$6,425), which protects the entire circuit-breaker panel from spikes, surges, and line interference, regardless of load.

For users who do not want an expensive system, there are surge sup-

pressors that protect individual pieces of equipment from large jolts of electricity. As effective as surge suppressors are in dissipating short-term voltage transients, they themselves have short lives. Unless these devices can be monitored to see if they still work after handling high voltage, they can cause as many problems as they are supposed to cure.

That was the case in Pennsylvania last August when the personal computers at the Erie County Bar Association experienced a severe spike during a thunderstorm. Although the Altos Personal Computer on which the organization runs its lawyer-referral service was protected by a surge suppressor and the lights never even flickered, there was extensive damage to the computer and modem. All the data on the floppy disks and hard disk in use at the time were lost.

According to Sandra Brydon, executive director of the association, in addition to the \$600 it cost to repair the equipment, for the next six weeks the

Having Computer Problems That You Can't Explain?

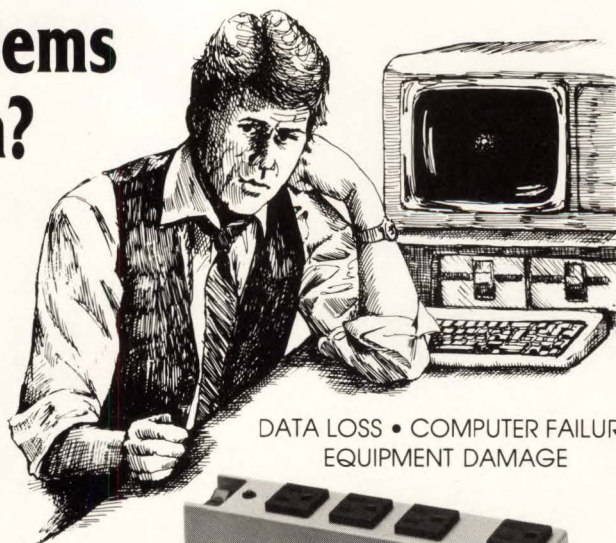
If you are having unexplainable microcomputer failure, it may be due to 6 common power problems that can either ruin your data, destroy your schedules or damage your equipment.

The MINUTEMAN™, by Para Systems, solves power problems. It

provides standby emergency power during blackouts, brownouts and other power interruptions, and also constantly filters the power from surges, spikes and EMI/RFI. There is no better way to protect your micro from all these problems.

If you are not plagued by power drops or outages, you may choose the "CLEAN POWER 1200" surge protector that filters out surges, spikes and EMI/RFI.

All Para Systems products come with a 30-day money back guarantee plus a 90 day limited warranty.



DATA LOSS • COMPUTER FAILURE
EQUIPMENT DAMAGE



UNINTERRUPTIBLE POWER SUPPLIES

FROM \$435 RETAIL

PROTECTION FROM:

- ★ BLACKOUTS
- ★ BROWNOUTS
- ★ INTERRUPTIONS
- ★ SPIKES
- ★ SURGES
- ★ EMI/RFI



WRITE OR CALL FOR MORE DETAILS & ORDERING INFORMATION

11425 Mathis St., Suite 404, Dallas, TX 75234

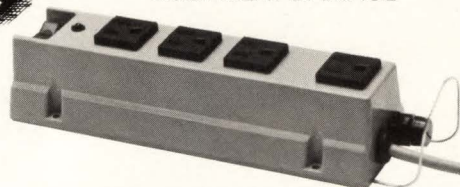
214/869-1688

SURGE PROTECTORS

ONLY \$49.95 RETAIL

PROTECTION FROM:

- ★ SURGES
- ★ SPIKES
- ★ EMI/RFI



THE THINGS COMPUTER USERS HAVE NO POWER OVER.

A whole host of natural and human disasters can shut your electric power down at any time.

And lost power can cause your personal computer serious trouble. Big blocks of data can be garbled and wiped right off your discs. Your computer's main memory can go blank and sensitive electronic components can even be damaged.

Protect your data and your business profits from the power line with Elgar's Uninterruptible

Power Systems. Our desktop-size UPS monitors power from the line and when it fails, a battery back-up takes over and runs your computer long enough for you to shut your system down safely.

So don't leave your data unprotected another day. For more information or to order, call Elgar toll-free 800-854-2213. Major credit cards are welcome. To receive a 24x36 inch poster of our "Power

Disaster" scene, enclose \$2.00 for handling and write Elgar, Department P, at the address below.

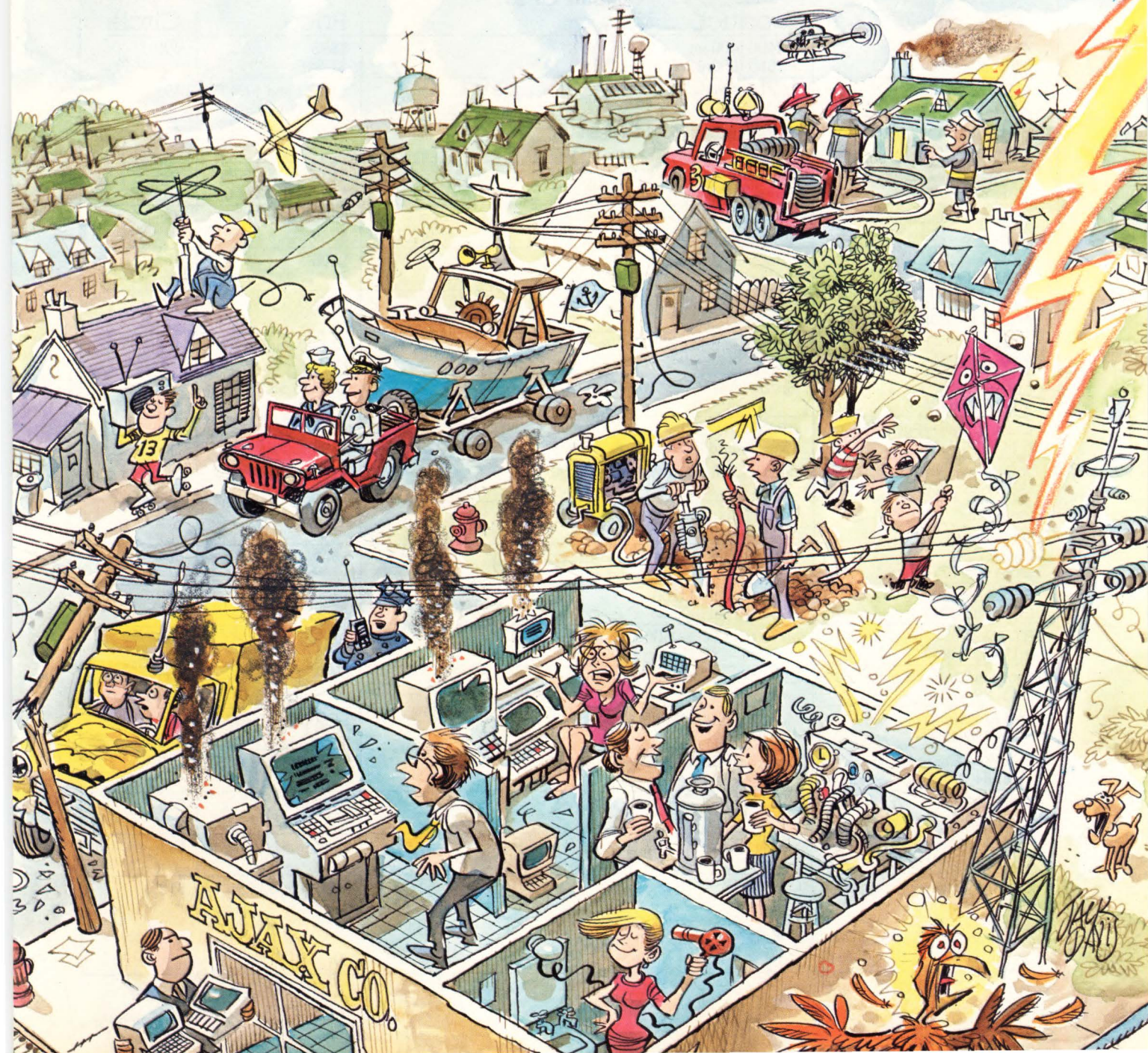
ELGAR SAVED THE DATA

ELGAR

An Onan/McGraw-Edison Company

9250 Brown Deer Road
San Diego, CA 92121
(619) 450-0085

CIRCLE 67



M I C R O S H I E L D S

lawyer-referral service became a time-consuming, by-hand operation. Although the rebuilt computer is hooked up to the same surge suppressor that protected it before the August storm, Brydon says the organization still does not know how much protection the device can offer.

Why did the bar association's surge suppressor fail? One possibility is that it

sacrificed itself during the storm or in a previous storm. Another possibility is that the spike came in through the telephone lines, which are unprotected. In either case, the experience of the Erie County Bar Association suggests that under the best circumstances, when precautions have been taken and managers begin to feel more confident that their systems are not vulnerable to de-

struction, Murphy's Law remains operative. It's the element of doubt that makes power-protection devices necessary in the first place, and it's this same degree of uncertainty that should caution managers to not so readily surrender their disbelief. □

David Morrison is a free-lance writer based in Mechanicsburg, PA.

MICRO POWER PROTECTION

Online UPSs

Vendor	Product	Price	Circle
AnSCO (213) 532-7780	PC400 (400 w) PC650 (650 w)	\$895 \$1,545	492
ATR Electronics (612) 222-3791	One-UPS Personal Computer (250 w and 500 w)	\$1,275 and \$1,475	493
Best Power Tech. (608) 565-7200	Micro-Ferrups (250 VA and 5 kVA)	\$945 and \$1,345	494
Computer Power (201) 735-8000	Computersave (500 VA to 1,000 VA) Series 36 (500 VA to 1,500 VA)	\$1,650 to \$1,975 \$1,690 to \$3,500	495
Dynatech Computer Power (408) 438-5760	Power House 250 (250 w) Power House 500 (500 w)	\$495 \$749	496
EFI (801) 486-5871	UPS-2010 (250 w)	\$695	497
Electro-Pac (312) 543-6200	Life-line (200 VA, 600 VA, 1,000 VA)	\$1,500	498
Elgar (619) 450-0085	UPS 102-1B (1,000 VA)	\$3,500 and up	499
EPD (617) 279-0424	Grizzly (200 VA to 1,000 VA)	\$895 to \$5,200	500
General Power Syst. (714) 956-9321	GPS Online (500 w to 35 kVA) Memorygard II (100 VA to 2 kVA)	\$1,650 to \$39,200 \$495 to \$1,995	501
Jefferson Electric (312) 626-7700	Energy Guard (200 VA to 750 VA)	\$900 to \$1,600	502
Panamax (415) 472-5547	Power Max (250 w and 400 w)	\$559 and \$695	503
Ratelco (206) 624-7770	UPS	\$500	504
RH Electronics (805) 688-2047	Guardian Angel (200 w) Power Angel (800 w)	\$495 \$1,295	505
RTE Deltec (619) 291-4211	Micro UPS Series 3000 (500 VA; Online—60 Hz)	\$1,300	506
Semiconductor Circuits (603) 893-2330	UPS	\$432	507
Sola Electric (312) 439-2800	Mini-UPS (400 VA, 750 VA)	\$1,500 to \$1,700	508
Solidstate Controls (614) 846-7500	Powerbase 1000 (750 VA to 10 kVA)	\$1,500 to \$15,000	509
Sun Research (603) 859-7110	May-Day Series (150 to 1,000 VA)	\$325 to \$3,195	510
Superior Electric (203) 582-9561	Stabiline UPS	\$940 to \$1,175	511
Tab Products (415) 852-2500	UPS Model 77-25 (2.5 kVA)	\$3,795 to \$3,995	512

w = watts; VA = volt-ampere; kVA = kilovolt-ampere; KW = kilowatt

M I C R O S H I E L D S

MICRO POWER PROTECTION

Online UPSs

Vendor	Product	Price	Circle
Terado (612) 646-2868	UPS	\$262 to \$1,900	513
Topaz (619) 279-0831	Series 82,000 (500 VA to 1.5 kVA) Micro UPS (400 VA to 1,000 VA)	\$3,755 to \$10,425 \$760 to \$1,085	514
Triad Power Syst. (214) 341-8700	Tri-UPS (5 KW to 500 KW; 300 VA to 800 VA)	\$895	515
UP Syst. (213) 634-0621	Micro UPS (500 w to 2,000 w)	\$1,750 to \$3,767	516
Wilmore Electronics (919) 732-9351	UPS	\$400	517

Standby UPSs

Vendor	Product	Price	Circle
Brooks Mktg. (215) 244-0264	Brooks UPS System (250 w, 500 w)	\$495 to \$775	518
Computer Power (201) 735-8000	Defender (400 VA to 1,200 VA)	\$690 to \$1,195	519
Elgar (619) 450-0085	SPR 350 (350 VA) SPS 400 (400 VA) SPS 800 (800 VA)	\$595 \$795 \$995	520
EPD (617) 279-0424	Grizzly (200 w to 1,000 w)	\$895 to \$5,200	521
General Power Syst. (714) 956-9321	Memorygard II (100 ws to 2 kVA)	\$495 to \$2,000	522
Indus-Tool (312) 642-6871	BC (200 w to 1,000 w) SB (200 w to 1,000 w)	\$359 to \$1,179 \$230 to \$1,000	523
Inmac (408) 727-1970	Datasaver (200 w and 120 w)	\$495 and \$450	524
Innovations In Control (408) 298-7218	UPS (200 w) RPS (500 w)	\$375 \$600	525
Kalgo Electronics (215) 837-0700	Line-Saver—LS 240 and LS 480 (240 w or 480 w)	\$495 to \$795	526
Panamax (415) 472-5547	Power Max (250 w and 400 w)	\$559 and \$695	527
Para Syst. (214) 869-1688	Minuteman (250 w, 500 w)	\$435 and \$699	528
Powermark (619) 565-8363	Automatic Power System	\$500 to \$800	529
PTI Industries (408) 429-6881	Data Shield (200 w to 800 w)	\$359 to \$899	530
Sola Electric (312) 439-2800	SPS (400 VA to 800 VA)	\$700 to \$900	531

Line conditioners

Vendor	Product	Price	Circle
AnSCO (213) 532-7780	Desktop console (125 volts, 15 amps) Surge and noise outlet strips (120 volts, 15 amps) Clamp down line conditioner (120 volts, 15 amps)	\$149 \$80 and \$120 \$43	532
ATR Electronics (612) 222-3791	One-UPS Conditioner	\$250	533
Compumart (901) 685-5021	Model LS-600 Model LC-1200 Model LC-1800	\$100 \$180 \$240	534

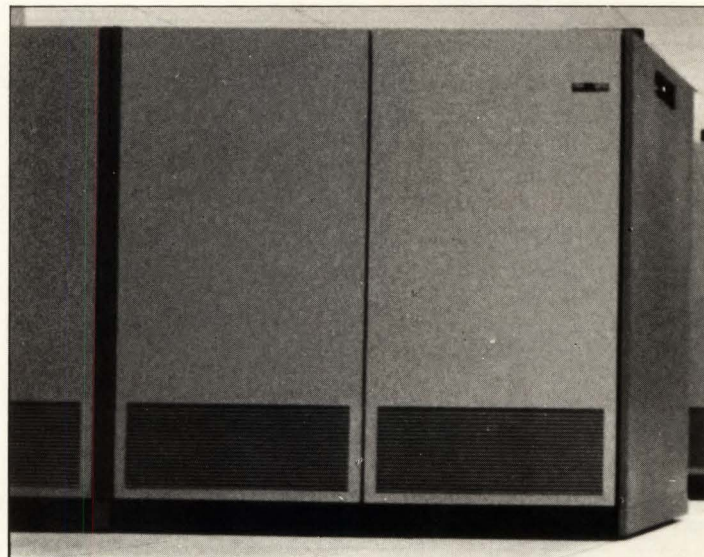
w = watts; VA = volt-ampere; kVA = kilovolt-ampere; KW = kilowatt

Here's how you can:

Identify key prospects

Improve
direct mail response

Lower
your cost per sale



Take Advantage of Mailing Lists from Hayden

Hayden Direct Marketing Services offers you the most specialized, high quality, flexible lists you can buy in the computer industry—and they are proven responsive!

Now You Can Target Prospects By Manufacturer / Model# On Site

For a little more than 1¢ per name, you can have the option of selecting individual labels by manufacturer and model number. Zero in on only those you want to reach. For example . . . select labels for managers with IBM & Plug Compatibles such as . . .

IBM 3081/303X/4341/4331 •

Amdahl 580/470

Or . . . with medium/large mainframes like these . . .

DEC VAX/10/20 series • H-P 3000 • Data General C/350-M/600/MV 8000

And these minicomputers . . . Data General Eclipse/Nova • DEC PDP 8/11 • H-P 250/300/1000 • IBM series 1/3/7/32/34/38
Or micro/personal computers like . . .

Apple II/III • Commodore • Radio Shack
PLUS . . . dozens of others.

Give Your Direct Mail High Impact At Low Cost

Hayden gives you 100% management lists from Computer Decisions subscribers.

That means you reach the industry's prime decision makers . . . and the base cost is *an amazingly low \$60.00/M*

Select These Options Tailored To Your Needs

Job title/function	\$5/M
Business/industry	\$5/M
SCF, or state	\$5/M
5-digit, zip select tapes	\$10/M
Manufacturer/model number	\$20/M
4-up Cheshire labels	no extra charge

Pressure-sensitive labels	\$8/M
Total list	175,000

managers

Minimum order . . . 5,000 names \$275.00

**HAYDEN
DIRECT
MARKETING
SERVICES**

You can test these lists for as little as \$300.00. All you have to do is call Hayden Direct Marketing today at (201) 393-6384 or fill out coupon. We'll tell you how you can

Zero in

on your best prospects.

Name _____ Title _____

Company _____

Address _____

City _____ State _____ Zip _____

Telephone _____

CD-4/23/85

Mail today to:
Hayden Direct Marketing Services
10 Mulholland Drive
Hasbrouck Heights, N.J. 07604

Photo courtesy of McDonnell Douglas Corp.

M I C R O S H I E L D S

MICRO POWER PROTECTION

Line conditioners

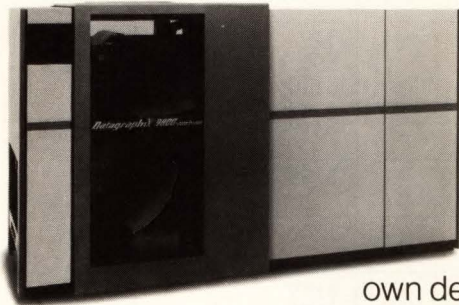
Vendor	Product	Price	Circle
Computer Accessories (619) 695-3773	Power Director; Model P22 (4 outlets; 600 volts) Model P2 (5 outlets; 600 volts) Model P12 (6 outlets, digital clock; 600 volts)	\$99 \$139 \$199	535
Computer Power (201) 735-8000	LCR (single-phase—250 VA to 25 kVA; three-phase—3 kVA to 75 kVA)	\$310 to \$8,100	536
Current Tech./Amtek (214) 238-5300	Power Siftor (1.8 kVA to 12 kVA) PSH (7.2 kVA to 18 kVA)	\$825 to \$3,669 \$2,705 to \$3,915	537
Dynatech Computer Power (408) 438-5760	BP-1102 (215 VA) BP-1103 (385 VA) BP-1105 (550 VA) BP-1107 (750 VA)	\$260 \$359 \$419 \$569	538
EFI (801) 486-5871	EDP 2000 (15 amps)	\$169	539
Electronic Specialists (617) 655-1532	Kleen-Line Conditioner (250 w to 2,000 w)	\$290 to \$1,000	540
Elgar (619) 450-0085	PLC series (125 to 1,500 VA)	\$225 to \$750	541
Exlin (619) 571-3134	Computer Power Conditioner (200 VA to 2,000 VA) Isolators	\$325 to \$2,500 \$90 to \$275	542
Indus-Tool (312) 642-6871	Line Conditioner Stabilizer (600 VA to 1,800 VA)	\$119 to \$299	543
Inmac (408) 727-1970	Power Line Conditioner (500 w)	\$425	544
ITT (419) 468-8100	Custom Power Supply	\$50	545
Jefferson Electric (312) 626-7700	Mini-Guard (300 VA to 2,000 kVA) Volt-Guard (300 VA to 11 kVA)	\$80 to \$6,000 \$60 to \$3,000	546
Micron Industries (312) 345-0788	Power Conditioners	\$100 and up	547
MPL Power Syst. PLC (804) 262-6068	CVT Line (200 VA to 2.5 kVA)	\$150 to \$850	548
Oneac (312) 295-2800	Micro-Mate (200 VA to 750 VA)	\$265 to \$589	549
Panamax (415) 472-5547	Max (all models 120 volt; one to six receptacles) Ultra Max (120 volt) Tele Max (120 volt)	\$69 to \$119 \$159 \$89	550
Pilgrim Electric (516) 420-8989	Conditioner Power Outlet Strip	\$30 to \$181	551
Para Syst. (214) 869-1688	Clean Power 1200 (200 volts)	\$50	552
Power Distribution (804) 320-2320	Computer Shield III (.25 kVA to 15 kVA)	\$580 to \$6,100	553
Power Integrity (919) 379-9773	AC Models (single and 3-phase; 120 to 480 volts) DC Models (5 to 48 volts)	\$32 to \$396 \$21 to \$23	554
Power-Matic (619) 292-4422	Varitron	\$690	555
Pulizzi Engineering (714) 540-4229	LPC 115-4 (120 volts, 12 amps, 60 Hz) TPC 115-8A (120 volts, 12 amps, 60 Hz) TPC 115-8B (240 volts, 12 amps, 50 Hz) TPC 115 A (120 volts, 12 amps, 60 Hz) PC 115 B (240 volts, 12 amps, 50 Hz) Z-line	\$120 \$163 \$256 \$327 \$449 \$150 to \$550	556
RTE Deltec (619) 291-4211	Personal Conditioners (150 VA and 400 VA) GFC Series (500 VA)	\$195 and \$395 \$495	557

w = watts; VA = volt-ampere; kVA = kilovolt-ampere; KW = kilowatt

OUR 21,000 LPM PRINTER TAKES MANY FORMS.

If you need high volume and flexibility, you should know that the Datagraphix 9800 isn't just a 21,000 LPM laser printer. It also accepts the widest variety of paper form sizes of any non-impact printer, with form widths of 6.5" to 16" and a length range of 3.5" to 14". And all 9800 printers feature perf-to-perf printing on paper weights of 16 to 110 pounds, depending on paper type.

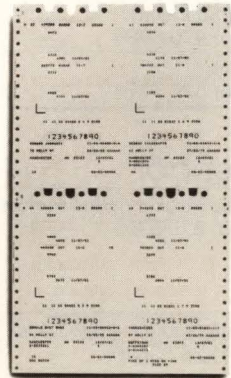
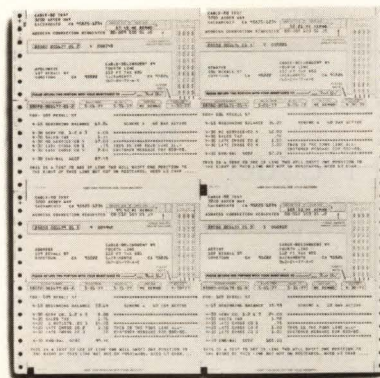
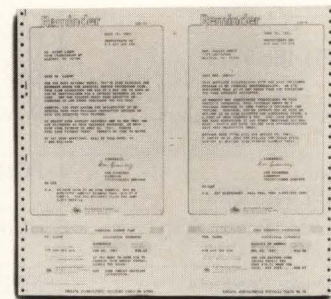
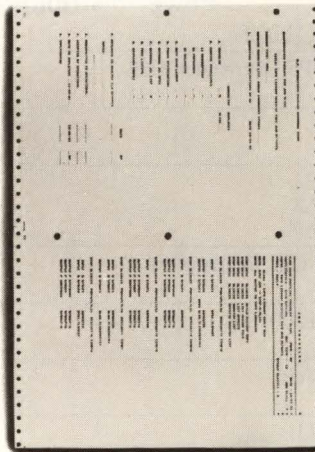
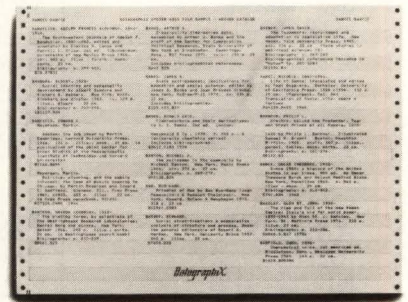
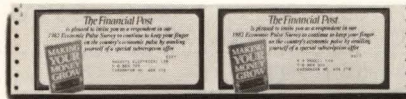
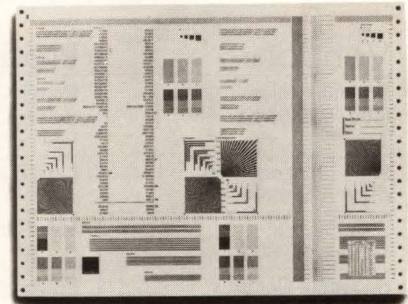
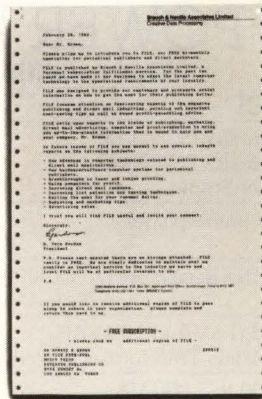
The 9800 series is an entirely new generation of non-impact, high speed laser printers — with more functions, features, and reliability. It offers up to 34 standard character sets, with a font editor that helps you create a nearly unlimited variety of fonts, logos or signatures of your



own design.

The 9800 series comes in a variety of on-line, off-line, or on-line/off-line configurations compatible with a broad selection of CPUs. Off-line models offer user-oriented menu-driven software, hard copy log, 6250 BPI tape drives with ping-ponging capability and more. On-line models offer full IBM 3800 compatibility, in addition to the advantages of Datagraphix's advanced engineering.

Combine these advanced features with excellent print quality and unmatched reliability, and you begin to see why Datagraphix is recognized as a supplier of superior computer output management products. The full-featured 9800 printers are available now, setting industry standards for up-time in customer sites throughout the U.S. and Canada.



Datagraphix®

The Computer Output Management Company
a General Dynamics subsidiary.

Dept. 3515, P.O. Box 82449, San Diego, CA 92138
(800) 854-2045, Ext. 5581
In California, please call (619) 291-9960, Ext. 5581
TWX: 910-335-2058

Visit us at the AIM Conference in Booth 942.

CIRCLE 70

MICRO POWER PROTECTION

Line conditioners

Vendor	Product	Price	Circle
Scientific Atlanta (404) 939-6340	Power Controller PC-115-60	\$285	558
	Power Controller PC-230-60	\$599	
	Power Outlet Strips	\$30 to \$52	
Shape Magnetronics (312) 620-8394	Line-Tamer (single-phase)	\$99	559
Sola Electric (312) 439-2800	Mini-Computer Regulators (70 to 3000 VA)	\$150 to \$1,400	560
Solidstate Controls (614) 846-7500	Powerguard (1 kVA to 10 kVA)	\$500 to \$4,000	561
	Silencer Isolation Transformer (1 kVA to 10 kVA)	\$300	
Sun Research (603) 859-7110	VR Unit (300 to 1,000 VA)	\$225 to \$800	562
Topaz (619) 279-0831	Series 77,000, 75,000, and 73,000 (1 to 2 kVA)	\$915 to \$1,025	563
	Power Conditioner (500 VA to 2 kVA)	\$470 to \$1,010	
Transtector Syst. (208) 772-8515	SL (120 volts, 15 amps)	\$109	564
	ACP 100 BL (120 volts, 15 amps)	\$185	

Power-distribution units

Vendor	Product	Price	Circle
ATR Electronics (612) 222-3791	One-UPS Distribution Unit	\$575	565
Compumart (901) 685-5021	Isobar	\$55 to \$98	566
EFI (801) 486-5871	MPI-153	\$79	567
	MPI-253	\$99	
	MPI-453	\$139	
Electronic Specialists (617) 655-1532	Power-Line Interrupters	\$175 to \$300	568
Elgar (619) 450-0085	PCM 1200	\$199	569
Marelco Power Syst. (313) 356-5004	Stedi-Volt	\$200	570
Marway Products (714) 973-1800	MPD 110	\$149	571
	MPD 115-230	\$375	
Pilgrim Electric (516) 420-8989	Voltector	\$137 to \$305	572
Ratelco (206) 624-7770	Distribution System	\$500	573

Power-line monitors

Vendor	Product	Price	Circle
Basic Measuring Instruments (415) 570-5355	GS-10 power monitor filter	\$300	574
	GS-1 power monitor	\$345	
	GS-2X power monitor	\$1,375	
	GS-3 power monitor	\$2,630	
	Model 4800 graphic environmental monitor	\$7,200 to \$9,500	
Dranetz Engineering Labs. (201) 287-3680	Powerline Disturbance Analyzer	\$1,950 to \$12,000	575
	Universal Disturbance Analyzer	Same	
	Remote Monitor Units	Same	
Dynatech Computer Power (206) 624-7770	RLM Line Monitor (120 volts)	\$200	576
	PLM 1 Power Line Monitor (120 volts)	\$495	
Liebert Instrument Grp. (916) 381-2730	Model 3600A	\$4,500 to \$6,000	577

w = watts; VA = volt-ampere; kVA = kilovolt-ampere; KW = kilowatt

M I C R O S H I E L D S

MICRO POWER PROTECTION

Power-line monitors

Vendor	Product	Price	Circle
Power-Science (619) 292-4322	Power Disturbance Analyzer	\$3,500	578
TII Industries (516) 789-5020	GPM P 120 60	\$975	579

Surge suppressors

Vendor	Product	Price	Circle
AnSCO (213) 532-7780	Desk-top console (125 volts, 15 amps) Surge and noise outlet strips (120 volts, 15 amps) Clamp down line conditioner (120 volts, 15 amps)	\$149 \$80 and \$120 \$43	580
ATR Electronics (612) 222-3791	Sekhiri Filters and Transient Suppressors	\$125	581
Brooks Mktg. (215) 244-0264	Surge Stopper	\$12 to \$85	582
Challenger Circle F (609) 392-3141	Surge Challengers	\$10 to \$40	583
Compumart (901) 685-5021	Computect Model 6 Computect Model 6+	\$40 \$50	584
Computer Accessories (619) 695-3773	Powerline Four (4 outlets) Powerline Six (6 outlets)	\$50 \$80	585
Computer Mate (214) 669-9370	EPD	\$40 to \$150	586
Computer Power (201) 735-8000	Powerstrip	\$80	587
Current Tech./Amtek (214) 238-5300	Power Sifter	\$300	588
Dynatech Computer Power (408) 438-5760	Surge Sentry H1 F (single-outlet) HF (2-outlet) MSF (6-outlet) System Controller (5-outlet) Surge Dropout Protector BSF Clip-Strip Line (6-outlet)	\$70 \$80 \$100 \$180 \$130 \$112	589
EFI (801) 486-5871	Plug-in strips (6 outlets; up to 15 amps): EFI-153 EFI-253XT EFI-453 Turbo ST	\$79 \$99 \$139	590
Electrolert (513) 667-2461	Power Surge Protectors	\$30 to \$120	591
Electronic Specialists (617) 655-1532	Kleen-Line Suppressors Kleen-Line Power Interrupters Kleen-Line Security System for phone/modem/data lines	\$27 to \$150 \$200 to \$350 \$65 to \$160	592
Elgar (619) 450-0085	PCM 1200	\$199	593
EPD (617) 279-0424	Lemon Lime Peach Orange	\$50 \$70 \$60 \$100	594
General Semiconductor Industries (602) 968-3101	Model 587 Series (5 to 20 amps) Model 126-K6	\$46 to \$83 \$90 to \$99	595
Indus-Tool (312) 642-6871	Isobar	\$55 to \$99	596
Inland (313) 583-7150	In-line Surge	\$26	597

w = watts; VA = volt-ampere; kVA = kilovolt-ampere; KW = kilowatt

M I C R O S H I E L D S

MICRO POWER PROTECTION

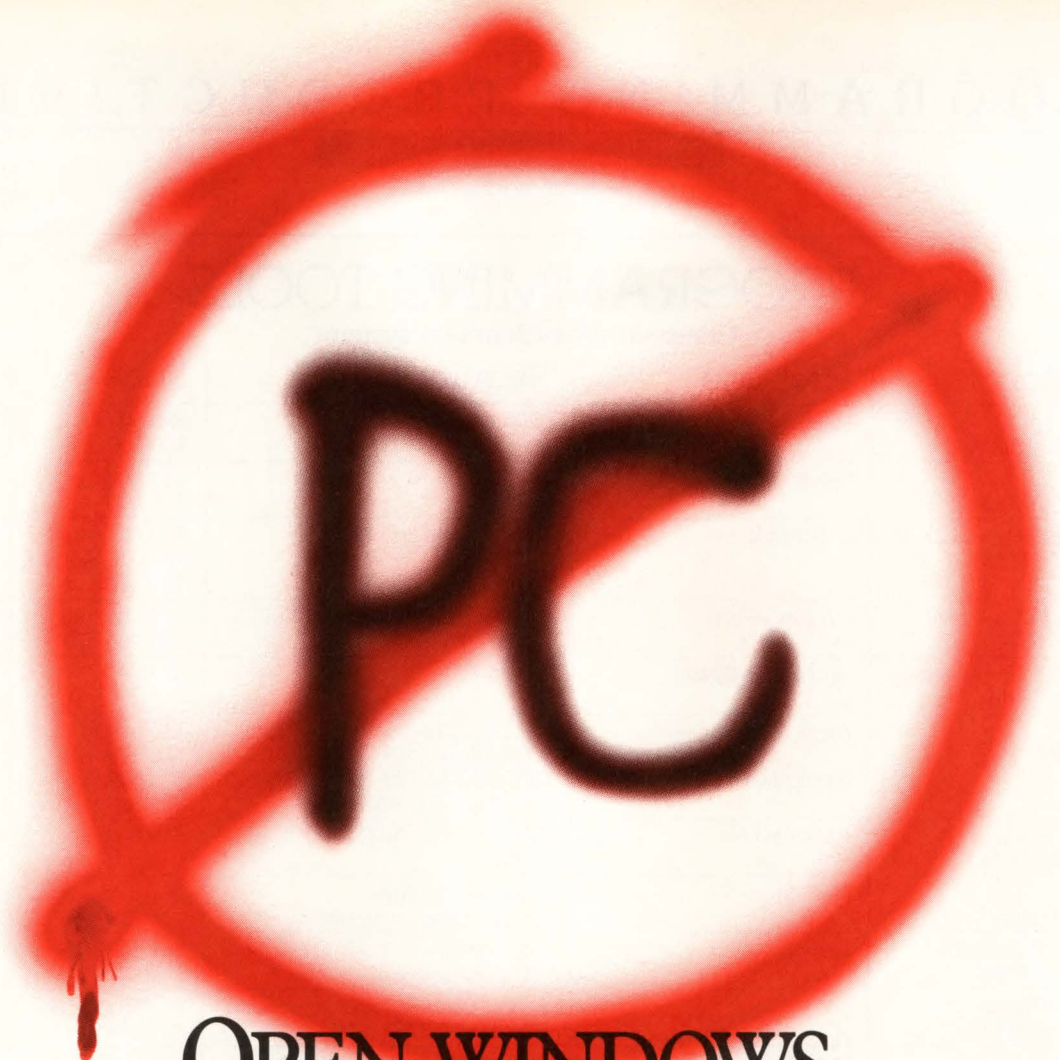
Surge suppressors

Vendor	Product	Price	Circle
Inmac (408) 727-1970	Surge Protector	\$69 to \$149	598
Kalgo Electronics (215) 837-0700	Spike-Spikers	\$35 to \$117	599
Kensington Microware (212) 475-5200	System Saver PC Saver Micro Saver Master Piece	\$90 \$50 \$70 \$140	600
MCG Electronics (516) 586-5125	Data-Line Protector	\$68 to \$600	601
Micron Industries (312) 345-0788	Suppressors	\$100 and up	602
Networx (212) 821-7555	Networks	\$30 to \$99	603
Panamax (415) 472-5547	Data Max (for phone lines)	\$49	604
Para Syst. (214) 869-1688	Clean Power 1200	\$50	605
Perma Power Electronics (312) 763-0763	Perma Power Surge Suppressors Multiple Outlet Strips	\$75 \$17 to \$30	606
PMC Industries (619) 695-3520	Surge and Noise Buster Line	\$40 to \$249	607
Power Integrity (919) 379-9773	ZTAT (120 VA; (single phase) Shunt Suppressors (480/277-volt; 3-phase; 50 to 400 Hz)	\$109 \$146 to \$285	608
PTI Industries (408) 429-6881	Data Shield Model 110 AMS Data Shield Model 100 Data Shield Model 85 Data Shield Model 75	\$120 \$99 \$89 \$59	609
Pulizzi Engineering (714) 540-4229	LPC 115-4 (4 receptacles; 12 amps, 120 volts, 60 Hz)	\$120	610
SL Industries (609) 456-5400	Data Gard—surge and noise suppressor Line Gard—surge suppressor Data Gard/SST—surge and noise suppressor sequential switching timer	\$40 to \$100 \$20 \$160	485
Surgeonics Ltd. (914) 241-3203	Power Sentry 2 Power Sentry 4 TL-700 TL-710	\$30 \$60 \$200 \$800	611
Sutton Designs (607) 277-4301	ZX5000 Series	\$69 to \$160	612
Topaz (619) 279-0831	Series 10, Series 20, Series 30 (125 VA to 2.4 kVA)	\$235 to \$955	613
Transtector Syst. (208) 772-8515	CPS 150 ACP 100 BW	\$830 \$145	614
Ultima Electronics (516) 752-0144	Surgefree Surgefree Module SS-1060	\$13 (single socket) \$100 (10 sockets) \$4.50	615

Battery-powered emergency backup systems

Vendor	Product	Price	Circle
Tripp-Lite (312) 329-1777	Battery Backup Unit (1,000 w)	\$1,179	616

w = watts; VA = volt-ampere; kVA = kilovolt-ampere; KW = kilowatt



OPEN WINDOWS BETWEEN 3270 AND ASYNC HOSTS WITHOUT A PC.

Introducing the Lee Data 1221 Open Window Display. And **MORE LEEWAY™** for your growing Information System.

The Lee Data 1221 Open Window display shatters all your old window pains.

Now, for the first time, you can open windows to 4 concurrent host sessions.

And transfer information from window to window, host to host, and 3270 to Async in any combination.

And zoom any window to full screen in your choice of 4 standard IBM screen sizes, including 132 columns.

All without the expense of PC's you may not need.

But the Lee Data 1221 Open Window display is only one way we give you **MORE LEEWAY** for less money...

Our Lee Data Passport booklet is filled with other cost-saving products you should know about too.

Do you have your Passport yet?

Call 1-800-LEE-DATA or (612) 828-0300 for our FREE booklet, **MORE LEEWAY: Passport for MIS Planners**. Or write to Lee Data Marketing Services, 7075 Flying Cloud Drive, Eden Prairie, Minnesota 55344.



Name

Title

Company

Address

Phone

1100-426

**LEE DATA
CORPORATION**

© 1984 Lee Data Corporation



PROGRAMMING PRODUCTIVITY

(Continued from page 102)

PROGRAMMING TOOLS

Generators/development systems

Vendor	Package	Requirements	Price	Circle
Cincom Syst. (513) 662-2300	Mantis	3270-type terminals	\$30,000 to \$60,000	406
Cognos (617) 535-7350	Quick	HP 3000	\$14,000 to \$35,000	407
Commercial Syst. Lab (205) 821-1133	C/Script II	Data General with DBAM Data General with RDOS	\$20,000/AOS \$24,000/AOS/VS \$11,000	408
Computer Assoc. Int'l. (516) 333-6700	CA-Flexiscreen	Same systems under DOS, VSE, or OS/MVS	\$17,500/DOS \$23,000/OS	409
Computer Representative (408) 980-9898	Application Builder	HP 3000	\$9,950	410
Cortex (617) 894-7000	Application Factory Application Trio	DEC VAX-11/750, /780, /730, /725, Micro VAX DEC PDP-11 /70, /44, /23, /24, /34, Micro 11, VAX	\$10,000 to \$25,000 \$34,500 to \$89,500	411
Cullinet Syst. (617) 329-7700	ADS/On Line	IBM 360, 370, 30XX, 43XX, and PCMs	\$40,000	412
Geisco (301) 340-4000	Mark III	Honeywell DPS/8 family—timesharing service	Based on usage	413
Generation Sciences (516) 496-3060	Gamma	Any system with ANSI Cobol support with keyed access	\$80,000 to \$150,000	414
Henco Software (617) 890-8670	Info	Several minis and micros, including IBM PC XT; DEC VAX	\$1,200 to \$30,000	415
Informatics General (818) 887-9040	Mark V Mark IV	IBM 43XX, 30XX, and PCMs Same systems	\$100,000 \$40,000	416
Information & Syst. Research (412) 262-5507	Rims/MPG Plus Rims/Graf graphics-application generator	DEC PDP-11 and VAX DEC PDP-11 and VAX	\$5,750 to \$22,500 \$1,250 to \$2,500	417
Intelligent Information Syst. (212) 962-0662	IIS/Destiny	DEC VAX-11/750 and up DEC VAX-11/730 and below	\$49,500 \$39,500	418
JEM Assoc. (703) 471-9550	PDE	IBM Series/1	\$750	419
Al Lee & Assoc. (214) 446-9015	Magec	IBM mainframes with CICS, West I, or Datacom	\$28,000 to \$72,000	420
Lifeboat Syst. Designer Team (212) 831-3100	Formula II (8-bit) and Formulexor (16-bit)	Several micros based on Z-80; IBM PC; and 8086- and 8088-based micros under MS-DOS	\$695 \$695	423
Master Software (617) 924-0052	Program Master	IBM systems and PCMs under OS/MVS or OS/VM	\$95,000 to \$145,000	424
Mathematica (609) 799-2600	Ramis II Ramis II/PC Ram Link	IBM mainframes and PCMs under OS, VS, MVS, VM/CMS, DOS/VS, and DOS/VSE IBM PC XT/370 IBM PC, PC XT, and mainframes	\$24,000 to \$124,000 \$1,385 \$12,000 to \$16,000 (100 PCs to 1 mainframe)	425
Mgt. and Computer Svcs. (215) 648-0730	Promacs/CICS	IBM 360, 370, 43XX, 30XX	\$18,000/DOS \$24,000/OS	426
Micro Focus (415) 856-4161	Personal Cobol Professional Cobol	IBM PC IBM PC	\$399 \$3,000	427
Multiplications (617) 547-8050	Accolade	IBM 370, 43XX, 30XX	\$28,000/DOS \$39,000/OS	428
Mitchell Mgt. Syst. (617) 366-0800	AP Tools	DEC VAX under VMS	\$20,000 to \$50,000	465

(Continued on page 138)

AS A SOFTWARE VENDOR...

you need to present your products to knowledgeable, qualified prospects in a businesslike selling environment.

AS A SOFTWARE USER...

you need a convenient, educationally-oriented event that will keep you up-to-the-minute on the latest products and developments in software.

YOU NEED

SOFTWARE/expo

and INFOMART!

September 17-19, 1985 ■ INFOMART ■ Dallas, Texas

After five highly successful years in Chicago, SOFTWARE/expo moves to the Dallas INFOMART this fall in order to serve the buyers and sellers of software even better.

THE INFOMART ADVANTAGE

INFOMART, the nation's first market center devoted exclusively to the information-processing industry, is now a reality. It has housed several well-attended computer events since its grand opening in January. SOFTWARE/expo attendees will be able to examine new products and services on the exhibit floor and learn about new software trends in conference sessions, as always...but now they can visit the dozens of permanent INFOMART showrooms as well.



Exhibitors will find that this comprehensive computer environment attracts the most qualified buyers, and attendees will discover the entire world of information processing under a single roof. It will make your participation in SOFTWARE/expo twice as valuable!

SUPERB CONFERENCE SERIES

A fourth generation panel...a micro/link panel...a session on information center implementation... these and other pressing topics will be explored in the SOFTWARE/expo conference series, designed to keep you informed of the most recent advancements in software.

FULL RANGE OF EXHIBITS

Software products and services for systems of all sizes and types, from mainframe to micro, will be found on the SOFTWARE/expo exhibit floor. The software packages presented will run on a variety of systems, including IBM, Digital Equipment, Hewlett-Packard, and others.

**FOR COMPLETE INFORMATION,
CALL TOLL-FREE: 800-323-5155**

(Inside Illinois, call 1-312-299-3131)

Or Write:

SOFTWARE/expo

Suite 205 ■ 2400 East Devon Avenue ■ Des Plaines, IL 60018



Sponsored by INFOSYSTEMS

PROGRAMMING TOOLS

Generators/development systems

Vendor	Package	Requirements	Price	Circle
Pansophic Syst. (312) 986-6000	Telon	IBM 370, 30XX, 43XX under MVS or VS1	\$115,000 IMS/DC \$80,000 CICS	463
Phoenix Computer (213) 416-9040	Condor	IBM mainframes	\$22,000	429
Progeni Syst. (818) 956-0251	Progeni application-generator system	Burroughs B1000 and up Other Burroughs computers	\$15,000 to \$40,000 \$30,000 to \$60,000	430
Pro-IV (617) 486-9621	Pro-IV	DEC PDP-11 DEC Pro-350	\$20,000 \$350	431
Sage Syst. (301) 231-8686	APS	IBM 30XX, 43XX, and PCMs	\$200,000	432
Software AG (703) 860-5050	Natural/VSAM Natural	IBM mainframes IBM mainframes with Adabas	\$30,000/DOS \$35,000/VS1 \$40,000/MVS \$40,000/DOS \$50,000/OS/VS1, VM/CMS \$60,000/MVS	433
Software Express (713) 974-2298	Appgen	Systems under Unix, Xenix, or Pick operating systems	\$6,000	434
STSC (301) 984-5000	APL Plus	Several mainframes and micros	\$595 to \$25,000	435
Syncsort (201) 568-9700	Sydoc Cobol Documentation generator	IBM mainframes and PCMS under MVS, VS1, VS2	\$22,000/ 5 yr. lease	486
Teledyne Brown Engineering (205) 532-1661	TAGS: Storage & Retrieval Configuration Mgt. Diagnostic Analyzer Simulation Compiler	Apollo engineering workstations	\$20,000/license \$10,000/license \$25,000/license \$50,000/license	464
The Office Manager (206) 246-7022	Speed I Speed II	Wang 2200 series Wang VS	\$12,500 to \$50,000 \$12,500 to \$50,000	436

Screen editors and formatters

Vendor	Package	Requirements	Price	Circle
Applied Software (305) 626-4818	FSE+	IBM systems under MVS with TSO	\$2,500/year	437
BSC Computer Syst. (404) 977-0842	Flexsys 4 QL1	IBM Series/1 IBM PC, PC XT, PC AT	\$10,000 \$6,000	438
GT Software (404) 446-7999	BMS/GT	IBM mainframes and PCMs under DOS/VS(E), VS/1, or MVS with CICS	\$5,500 to \$8,900	439
Mgt. and Computer Svcs. (215) 648-0730	Paintmacs	IBM 360, 370, 43XX, 30XX	\$5,000/DOS \$6,000/OS	440
Phaser Syst. (415) 434-3990	SPF Editor Micro SPF	IBM PC, PC XT IBM PC, PC XT, PC AT, 3270 PC; Wang PC; TI PC	\$100 \$450	441
Software Plus (214) 783-1019	Fastmap	IBMs mainframes and PCMs under OS or DOS	\$4,900	442

Programming aids

Vendor	Package	Requirements	Price	Circle
David R. Black & Assoc. (412) 787-5100	Cobol Program Generator	Sperry, Prime, Honeywell, Data General, Harris systems	\$30,000	443

PROGRAMMING TOOLS

Programming aids

Vendor	Package	Requirements	Price	Circle
Business Controls (201) 340-9893	SB-5 Automated Cobol-program developer	DEC PDP-11, VAX-11, and Systems/10 and/20	\$12,000 to \$32,000	444
Clarity Concept Syst. (212) 254-3358	Enforcer I standards monitor for Cobol coding	All hardware running ANSI Cobol	\$9,600/year	445
CMS Software (209) 226-0674	Innopak preprocessor to create macros	Datapoint minis	\$4,000/DOS \$5,000/RMS	446
Comp-Aid (512) 629-3157	Renumf 1.4 Fortran programming aid	IBM 370 and higher under OS; HP 3000 under MPE	\$2,500	447
Computing Productivity (802) 496-4320	IP3 Cobol code generator	IBM 43XX, 30XX	\$80,000	448
Data Administration (714) 966-8711	Data Expediter data naming tool Data Mapper database- design tool	IBM mainframes under OS or MVS IBM mainframes	\$11,500 \$7,500	449
Database Syst. (602) 265-5968	Transact transaction-processing system—includes programming aids Entry data-entry development tool	Prime Series 50, DEC VAX Prime Series 50, DEC VAX	\$12,500 \$12,500	450
DPI Software (913) 541-1502	DGA file-access system—programming aid with screen-printing text editor	IBM 370, 43XX, 30XX, and PCMs with TSO, CICS, or VTAM	\$12,500	451
Group Operations (202) 887-5420	Editor II Cobol generator	IBM 360, 370	\$15,000	452
H & M Syst. Software (201) 845-3357	Mfast CICS map generator	IBM 360, 370	\$6,500/DOS \$8,000/OS	453
Industrial Mgt. Syst. (614) 594-3523	Menu-master front-end menu generator	HP 3000	\$1,200	660
Interactive Tech. (503) 644-0111	Pro-RDM Pascal-routine library	DEC PDP-11 DEC Professional 350 DEC VAX	\$2,495 \$995 \$4,795	454
Micro Focus (415) 856-4161	Animator programmer diagramming aid	IBM PC	\$795	455
Netron (416) 636-8333	CAP CAP 100	Wang VS Wang VS; IBM systems under CICS; IBM PC, Wang PC	\$16,000 to \$80,000 \$24,000 to \$120,000	421
On-line Business Syst. (415) 391-9555	Wylbur program- development tool	IBM 370, 43XX, 30XX, and PCMs	\$25,000 to \$55,000	456
Phoenix Syst. (412) 471-8380	System-80 Cobol-program generator	Several micros running RM-Cobol; several minis and mainframes	\$750 to \$15,000	457
SDA Federal Syst. (301) 345-6060	CL/1 Cobol generator	IBM 360, 370, 30XX, 43XX, Honeywell 6000/6600; Sperry 1100	\$35,000 to \$55,000	458
Signal Tech. (805) 683-3771	Smartstar data-management aid	DEC VAX under VMS	\$9,800 to \$19,800	459
Software Applications (212) 986-2515	Codabul	IBM 360, 370, and PCMs under OS	\$5,000	460
Systems Formation (602) 966-4358	Forge Cobol-code generator	Prime Series 50; DEC VAX under VMS	\$18,500	461
Syst. Support Software (513) 435-9514	Quikwrite (includes Quikjob III)	IBM under DOS and OS	\$252/mo. (OS) \$225/mo. (DOS)	462
Wollongong Grp. (415) 962-7100	Eunice co-resident Unix; includes development aids	DEC VAX under VMS	\$16,000 to \$31,000	661

(Continued from page 114)

center. The corporate security director may well understand, for example, how to protect inventory sitting in a warehouse or equipment in an office, but the idea of storing assets on a disk or a tape is outside his or her experience.

"The problem is that security professionals don't know enough about MIS/dp to help a whole heck of a lot," says CUNY's Benjamin Klein. As former director of a major financial-services institution's dp department, Klein has been dismayed at the inexperience of many security experts in protecting com-

puter-related assets. Their focus tends to be on hardware, rather than data, which might represent far greater assets, he says.

However, consultants caution MIS/dp executives from becoming overly guarded in their responsibility for data-center security. In fact, most security consultants prefer to see the establishment of closer working ties between the dp and security personnel rather than a move by MIS/dp toward self-sufficiency in security. One of the most frequently cited solutions to the dilemma is to educate security personnel in fundamental computer operations.

"Right now, there is very little in the way of education for corporate security personnel except trial and error," says Robert Courtney, an independent security consultant and chairman of the Data Processing Advisory Council to the U.S. Department of the Treasury. Courtney urges clients to establish classes for security personnel in the fundamentals of MIS/dp as part of comprehensive security programs. "You can't protect something if you don't understand what you're protecting, let alone what you're protecting it from," he says.

Jan Larsen, corporate-security director for Pfizer Inc., New York, and a chief architect of the pharmaceutical maker's data-center security program, says it is important to continuously air various and at times widely differing views on data-center security. "I found that when you put together enough experts, you get very different views on what's important to secure and what's not," says Larsen. "But it's only within that debate that the security director can begin to get a total picture of the corporation's data-center security needs."

Thus, the final component of a good physical security system is not hardware, but the ability of those responsible for the data center to test the effectiveness of the security measures they have developed and to make improvements. To do otherwise would be to break the first rule of security: Never assume you are secure enough. □

James Miskiewicz is a free-lance writer based in Flushing, NY.

Turns Spaghetti Code COBOL Into Structured COBOL Automatically

SUPERSTRUCTURE takes your unstructured COBOL programs and automatically produces structured COBOL programs that are easy to understand and maintain.

SUPERSTRUCTURE provides a simple and cost effective alternative to manually rewriting those unstructured programs that are a maintenance nightmare. Of course you can't believe it. Let us prove SUPERSTRUCTURE works, using your programs at your location. SUPERSTRUCTURE—the breakthrough you've been waiting for.

Call today: Marketing Director—
SUPERSTRUCTURE.

Group Operations, Incorporated
1110 Vermont Avenue, N.W.
Washington, D.C. 20005
(202) 887-5420

Offices in: Atlanta, Boston, Chicago,
Dallas, Hartford, Los Angeles, New
York and Toronto



New—Just Released! The Most Valuable MIS/dp Salary Study You Can Buy

Compensation in the MIS/dp Field (2ND EDITION)

Sponsored by
Computer Decisions, this
tightly-packed, 396-page
report provides the most
intensive study of salaries,
salary ranges, and bonuses
ever attempted in the
MIS/dp field. For 44 job
functions, ranging from
Junior Key Entry Operator to
Top MIS/dp Officer, it reports
all compensation data:

- By 16 levels of supervisory responsibility
- By geographical location—total U.S., U.S. by seven regions (including & excluding major metropolitan areas), and 28 metropolitan areas & states
- By 25 types of employer
- By total MIS/dp budget
- By number of employees
- By annual sales of manufacturing/ extractive and non-manufacturing organizations and utilities
- By total assets of financial organizations

**Compensation
in the
MIS/dp Field**

(2ND EDITION)

Sponsored by
**COMPUTER
DECISIONS**

- By insurance policies in force
- By education, experience, & sex

An *invaluable* tool for determining the
"right" salaries in the MIS/dp field. \$250.00

Complete & mail today for your 15-day FREE
Trial Copy—No Obligation!

Abbott, Langer & Associates. *Computer Decisions*. 10 Mulholland Drive. Hasbrouck Heights, N.J. 07604

Yes! I certainly can use *Compensation in the MIS/dp Field* in my work. Please rush my copy to me immediately! (If I'm not satisfied, I'll return it within 15 days and not be charged for it.)

- ☐ Check No. _____ for \$250.00 is enclosed (IL residents add 6 $\frac{1}{4}$ % sales tax.)
☐ Bill my employer, adding a small charge for shipping and handling.

Signature _____ Name _____

Title _____ Employer _____

Street Address of Employer* _____

City _____ State _____ Zip _____

*U.P.S. will not deliver to a P.O. Box. Please give street address.

What do your reports reveal about you?

He has a good head on his shoulders.

A good listener.

He's a very pleasant person.

Good grasp of the basic issues.

He has his feet firmly planted on the ground.

He's got a mind like a steel trap.

Tremendous analytical abilities.

He's dynamic.

A first rate problem-solver.

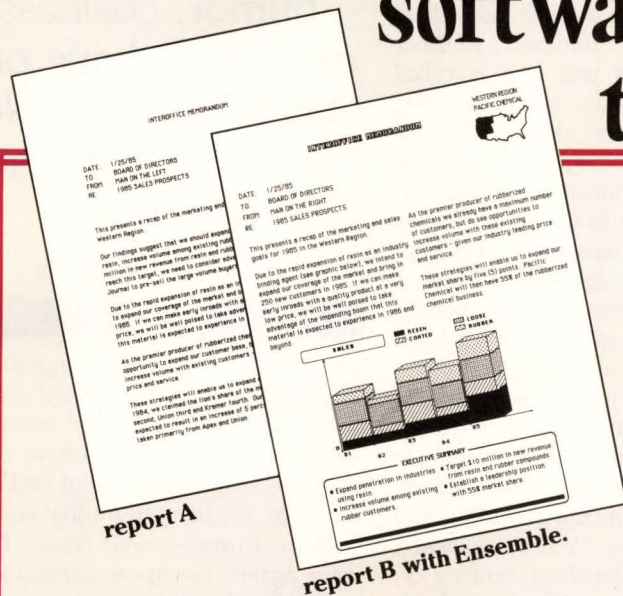
This guy is going places. Fast!

Executive with report A

Executive with report B
done with Ensemble.

Introducing Ensemble.TM

The first integrated business software package for the Macintosh.



Which report would you rather submit? Report B, submitted by the executive on the right was prepared with Ensemble. It integrates text, numbers and graphics. It's more interesting. It's more persuasive. And it's more impressive.

Every tool you need to generate impressive business reports is on a single Ensemble software disk.

Ensemble is the first fully integrated business software package for the Macintosh.TM

Ensemble combines Word Processing, Database Management, Report & Form Design, Calculations and Graphics in one very powerful and productive program.

It's all here—everything you need to merge text, numbers and graphics in your reports.

For example, with Ensemble you could draft an analysis of market trends; support your findings by inserting a spreadsheet, illustrate a critical comparison with a bar graph; highlight your conclusions by creating a border of stars around them and dramatize your recommendation with artwork you design especially for the report with MacPaint.TM

Ensemble's Report Creation capability is unique. But it's not the only way that Ensemble can help improve your performance. You can also use Ensemble to manage data-

bases, conduct decision support analyses, design brochures, implement direct mail programs and more.

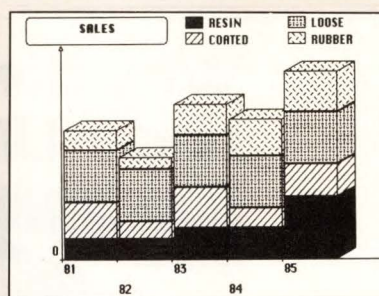
Best of all, Ensemble is as easy to use as your favorite personal computer. Ensemble was developed with you and your Macintosh in mind. It takes full advantage of the Macintosh User Interface, features a remarkably fluid operating style, and is compatible with MacWriteTM and MacPaintTM.

You can design your own "customized" spreadsheet formats with Ensemble. And a variety of calculation options are available including: all arithmetic, logical and comparative functions.

PROFIT ANALYSIS

100

Now you can easily create handsome two and three-dimensional business graphics with a sweep and a click of your mouse. Ensemble provides bar graphs, line graphs, pie charts, a time line graph and a scatter chart.



Thousands of business reports are prepared every day. Most are submitted for approval. Some are read. A few are discussed. Only a handful are remembered.

You can make a lasting impression with Ensemble. See your local software dealer today. Or call Hayden Software toll-free at 800-343-1218.

HAYDEN SOFTWARE COMPANY, INC.
600 Suffolk Street, Lowell MA 01854 (617) 937-0200

HAYDEN
SOFTWARE



Runs in
128K or 512K

Ensemble
Fulfills the promise of the Macintosh.

(Continued from page 81)

tor exclaimed: "Run them through, I thought you wanted me to shred them!"

Says Domanick, "At first my boss didn't believe us when we told him. He said: 'Sure, sure, now where are the cards?' After a while, we convinced him, and he got angry. Then for some unknown reason he started to laugh. Lucky for us he had a sense of humor!"

Dear Ann Landers: I have two brothers. One is a programmer and the other was just sentenced to the electric chair for murder. My mother died in an insane asylum when I was three years old. My two sisters are prostitutes; my father sells narcotics to high-school students. Recently, I met a girl and I want to marry her. My problem is: If I marry this girl, should I tell her one of my brothers is a programmer?

"When it comes to humor, business executives have one big advantage," says San Francisco-based humor con-

sultant Malcolm Kushner. "No one expects them to be funny. Because of this perception, employees will more likely appreciate their attempts." Kushner should know. As one who is called upon to spice up dull speeches, Kushner's livelihood depends on his ability to generate laughs for his clients. Kushner also conducts workshops for executives on how to use humor to gain attention, defuse tension, and establish a rapport. "The high-tech business is one of my specialties," Kushner boasts, "because the information that has to be communicated is so inherently dry."

Although the information may be dry, it's certainly not arid; the terrain is still rich enough to cultivate a joke or two. Think, for example, of all the acronyms that go with the territory. You might say to a user: "You know what a RAM is, right? Revolting Attitude on Monday." You can also play off the whole mystique of the computer. "This new system will do everything," you might say. "It will reduce our inventory,

"When it comes to humor, business executives have one big advantage. No one expects them to be funny."

Kushner, consultant

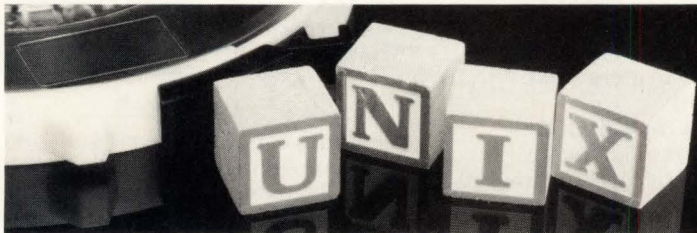
enhance our productivity, improve our business decisions. Why, it will even do the dishes if we want it to." Such lines won't get you on *The Tonight Show*, Kushner acknowledges, but that's not the point. It's the gesture that counts.

Both Kushner and David Baum warn against the use of canned jokes, especially when they are inappropriate to the situation or the audience. Jokes used in this way can become crutches, and may actually erect a barrier between you and your audience. The most effective office humor is spontaneous, suggested by what is happening at the time. By its very nature, this humor encourages employees to join in the fun rather than sit on the sidelines.

"I was hired to work with an executive of a Fortune 500 corporation," Baum relates. "He was a vice president, just two levels down from the president of the company. He was a lovely guy, but he was very serious at work, which intimidated his subordinates. I was to help him develop his sense of humor. So I said: 'When you get off the elevator in the morning, don't go straight to your office. Take 10 minutes to visit employees. Bring them coffee.' I instructed him to say at least three funny things to his secretary each week. After two months, this guy's image totally changed. Staff morale was improved, he was perceived as more accessible, and employees came to him with problems before those problems turned into disasters."

Ultimately, taking advantage of the humor edge requires little more than being human and letting your congeniality show through. Risk is involved, to be sure, but humor executed with sensitivity is a risk worth taking. □

Why don't we run under UNIX™?



With Unix you could take advantage of a rapidly growing market and the acclaimed C programming language. Lexeme Corporation makes Unix translations child's play. No matter what high-level language your system is written in, we will deliver a 100% automated, fully tested translation in C for any Unix system you choose. Call 412-281-5454 today to find out how fast and easy translations can be with our portable automated translation tools.



LEXEME

Lexeme Corporation
Suite 250 Commerce Court
4 Station Square
Pittsburgh, PA 15219-1119

UNIX is a trademark of AT&T Bell Laboratories.

(Continued from page 52)

quickly to users who need them and to save computer resources. One report-writing package that puts a premium on speed is Freestyle, from On-Line Software International. Freestyle includes Executrieve/CICS, an online query system, and Omnilink, a program that allows users to download information located with Executrieve into personal-computer applications. Freestyle, which now works with VSAM, ISAM, and BDAM files, may soon be able to draw reports from information stored in some DBMSs, claims a spokesperson for the vendor.

Freestyle includes a data dictionary in which data items, files, data views, and authorized-access profiles for each user are defined. The package's speed comes from On-Line's proprietary content-address method, a technique for indexing items in a file through a mathematical representation of their content and location. Users retrieve information from files according to combinations of criteria—the more criteria added, the faster the search.

Citicorp Credit Services in Melville, NY, uses Freestyle to give its business analysts and clerical workers up-to-date information on Citicorp's credit-card users. The data are stored in more than 100 different VSAM files. Joseph Krystoforski, assistant vice president for systems development at Citicorp Credit Services, says Freestyle has saved programmer time and computer resources while giving users logical data views independent of the filing arrangements.

Krystoforski figures that without Freestyle, he would need to commit an additional full-time programmer to generate user-requested reports. "Freestyle's speed is fantastic," he says, adding that a typical VSAM file search that used to take two or three seconds—or longer if the computer were busy—now takes less than a second. The difference may not be crucial to users, Krystoforski says, but it cuts central-processor usage by 50 percent to 60 percent. The organization also cuts main-frame use by having users run queries online and then download the information to their personal computers via Omnilink to process the reports.

Report writers are not the ultimate

answer to the problem of getting useful information out of computers. Relational DBMSs promise users much more flexibility for searching large quantities of diverse information and building reports from it. But report writers can be a strong interim solution to the report-writing dilemma for organizations that aren't yet ready to commit to relational DBMSs. Indeed, report writers may help make migrating to the relational technology easier by guiding organizations to dissect files kept in older structures not only for report writing, but also for reformatting. □

SEAS CHECKS PRODUCTIVITY

Quantitative Software Management Inc. (McLean, VA), specialists in software-development measurement, recently announced a service for analyzing the productivity of software developers.

The Software Engineering Assessment Service (SEAS) uses interviews and written surveys of a development team's members, analyses of productivity data, and comparisons with industry averages to determine the team's effectiveness. Usually, the assessment compares several of an organization's projects to determine both the most productive practices and problem areas.

SEAS analyses take two to four months and cost from \$10,000 for a development group with 15 to 30 members to \$55,000 for an organization with 400 or more employees. Call (703) 790-0055 for more information.

COMPUTER CONDO

Tired of shoveling through a blizzard of managerial details every morning to get your data center to work? Fed up with constantly weeding out technological pests to get your information services to grow? Martin Marietta Data Systems would like to interest you in a Florida condominium. The Greenbelt, MD-based information-technology arm of aerospace giant Martin Marietta

Corp. (Bethesda, MD) recently began offering IBM 43XX-sized shares of own large data center, located in Orlando, FL.

Under the plan, called Orlando 4000, a customer licenses a portion of Martin Marietta's data-center resources, including processing, communications, and technical support. At first glance, it may appear that Orlando 4000 is a typical timesharing system. However, according to a Martin Marietta spokesperson, the main difference between Martin Marietta's plan and traditional timesharing plans is in the service's scope. The condominium approach provides a complete data center, controlled at the client organization's corporate level and designed to meet its entire processing needs, he says.

Customers can run any software they like—right now, the condo offers the MVS operating system, and plans call for the addition of a second operating system, VM—and may maintain their own applications-development team. Timesharing, on the other hand, traditionally offers only specific applications to individual departments or operating units.

Another difference between the condominium approach and traditional timesharing is in the pricing structure. Charges for timesharing programs are usually based on usage. Departmental users who heavily use timesharing systems have often surprised their parent organizations by running up large bills. However, Orlando 4000's monthly charge is relatively fixed. The charge depends mostly on a flat rate determined by the client's resource configuration—which can be changed monthly—and varies only slightly due to items billed according to use.

A corporate user running the equivalent of an IBM 4331 with six disk drive would pay about \$23,000 per month, the Martin Marietta spokesperson says. Martin Marietta will also provide detailed utilization information to allow clients to fine-tune their configurations. Clients will also be provided with usage information so that costs can be charged back to user departments. For more information about Orlando 4000, contact Martin Marietta Data Systems at (301) 982-6500.

SMART SHREDDERS

Security Engineered Machinery's Model 1200 and Model 1600 shredders have electronic controls that prevent jamming by reversing shredders before a jam occurs; the unit then

shuts off until the condition is corrected. Price: \$1,750 for Model 1200 and \$2,000 for Model 1600. Model 1200 has a 12-inch feed opening and allows up to 24 sheets per feed. Model 1600 has a 16-inch feed opening and handles a maximum of 14 sheets per feed.

Security Engineered Machinery, 5 Walkup Dr., Westboro, MA, 01581.
(617) 366-1488. **Circle 200**

SECURITY CABINETS

Security and organizing cabinets lock up all components of a microcomputer system, except the printer. Price: \$145 to \$195. Cabinets are available for a wide variety of microcomputers, including the IBM PC, Macintosh, and Apple IIe, as well as Tandy micros.

Omni Tech Corp., 1455 N. Barker Rd., Brookfield, WI 53005.
(414) 784-4178. **Circle 201**

PRIVACY SOFTWARE

P/C Privacy: Personal/Confidential is now available with a Data Encryption Standard (DES). P/C Privacy's DES runs on the IBM PC, PC XT, and PC AT and costs \$195.

MCTel Inc., 3 Bala Plaza East, Bala Cynwyd, PA 19004.
(215) 668-0983. **Circle 202**

SHREDDER STAND

The Model SST-3 paper-shredder stand is 29 inches high, with a top shelf 17 inches wide and 20 inches deep. Price: \$85. The stand has two shelves, 2-inch casters, and a wire frame that holds plastic paper-catching bags.

Bretford Manufacturing Inc., 9715 Soreng Ave., Schiller Park, IL 60176.
(312) 678-2545. **Circle 203**

Tool for IBM S/38: Service/38, a documentation and object-management tool for the IBM S/38, offers commands that are organized into four modules: report document, text writer, object management, and object analysis. The package, from Soft Wear Management, Riverside, CA, costs \$1,275. **Circle 204**

CONVERSION CONVERSION CONVERSION CONVERSION CONVERSION CONVERSION CONVERSION

NO CONVERSION IS TOO BIG OR TOO SMALL.

Experience in conversions is generally the most important factor in success or failure when changing computers or languages.

CAP GEMINI DASD has been in the conversion business continuously since 1974. As a client, you enjoy over 10 years of constantly

improved technology in methods, translators, and other conversion tools to help you avoid the many pitfalls present in any conversion process.

We structure the plans and techniques to secure the fast, high-risk environment of moving all of a company's applications at one time.



For instant information call 800-558-5148; in Maryland (301) 596-0080 or your local CAP GEMINI DASD branch.

Atlanta	Dallas	Jacksonville	New York	Seattle
Austin, TX	Denver	Los Angeles	Orlando	Spartanburg, SC
Baltimore	Edison, NJ	Miami	Philadelphia	St. Louis
Charlotte, NC	Houston	Milwaukee	Portland	Tampa
Chicago	Indianapolis	Minneapolis	San Francisco	Washington, DC
		New England		

CIRCLE 74

HP 3000 SECURITY

The Console Engine, a microcomputer interface, guards against unauthorized remote-console access to HP 3000 minicomputers. Price: \$2,150. The system requires a password from anyone dialing into a remote-console port on an HP 3000. It can also be set to require validation from another Console Engine at the caller's end.

Telamon Inc., 1615 Broadway, Oakland, CA 94612.

(415) 835-5603.

Circle 205

INSULATED FILE

The Fire Guard Model 350/125 insulated file protects paper records and computer media. Price: \$1,210 to \$2,690. Paper records are protected by 350-degree rated drawers, and computer media are protected by 125-degree rated drawers. Six models are available with two, three, or four drawers.

Schwab Safe Co. Inc., 3000 Main St., Lafayette, IN 47903-5088.

(317) 447-9470.

Circle 206

PC PROTECTION

A new version of the Security protection package for micros provides for file encryption, and password and user-code protection for all programs. Price: \$50. It runs on PC-DOS and MS-DOS computers.

The Answer in Computers, 6035 University Ave., San Diego, CA 92115.

(619) 287-0795.

Circle 207

MULTI-LEVEL SECURITY

Silent Partner offers accounting, financial, and inventory-related applications for IBM and compatible mainframes. Prices start at \$4,200. The applica-

tions can be bought modularly or fully integrated. The system offers multiple-level security, interactive updates, and an online help facility.

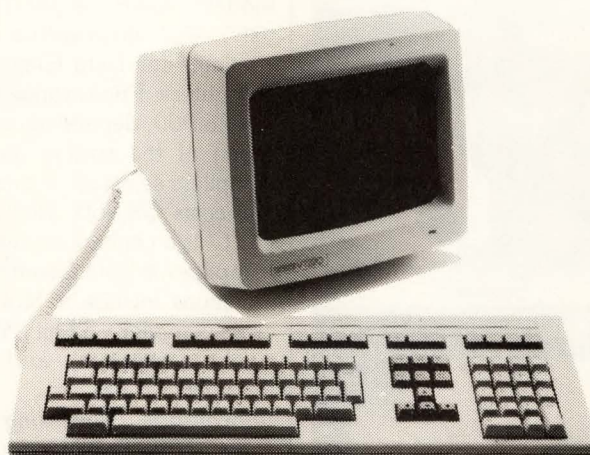
Silent Partner Systems Corp., 330-1441 Creekside Dr., Vancouver, B.C. Canada V6J 4S7.

(604) 736-3551.

Circle 208

Computer books: *The Graphic Macintosh Book* (\$11.95) and *The Graphic PC-DOS Book* (\$9.95), published by CBS Computer Books (New York), use graphic illustrations to explain the Apple Macintosh microcomputer and the PC-DOS operating system.

Circle 209



Digital VT220*

Buy, lease or rent at great prices from MTI.

MTI is an Authorized Terminals Distributor for Digital Equipment Corp., so we get these great terminals first. You'll find MTI is the one source for all the computer and data communications equipment, applications expertise and service you'll ever need. And all of this at prices that are hard to beat. Save a bundle. Call MTI Systems today.



AUTHORIZED
digital
TERMINALS DISTRIBUTOR

A SUBSIDIARY OF DUCOMMUN INCORPORATED

**Computer & Data Communications Equipment
Sales / Leasing / Service / Systems Integration**

New York:	New Jersey:	Ohio:	Kentucky:
212/226-2337	201/227-5552	216/464-6688	502/499-6656
516/621-6200	Pennsylvania:	513/891-7050	California:
518/449-5959	412/931-9351	*HP in MTI areas only.	818/883-7633

All other areas: 800/645-6530

*VT220 is a trademark of Digital Equipment Corp.

At last, a compact system for forms processing at a compact price.

Desktop Decollator



Desktop Burster



Desktop Shredder



Swingline's desktop units are so compact they fit just about anywhere.

But don't let the compact size and compact price fool you. Swingline's Burster, Decollator and Shredder can do just about anything that comes across your desk. They let you separate long forms, put them into convenient stacks while removing the carbon and keep confidential information under wraps — all with the push of a button. And you can own all three for what you usually pay for one.

For more information write Swingline Inc., Dept. B, 32-00 Skillman Ave., L.I.C., New York 11101 or call (718) 729-9600.

Swingline®

We're a lot more than staplers.

CIRCLE 76

S O F T W A R E

"C" LANGUAGE TOOLS

Tracer is a C language source-analysis debugging tool that runs in three modes: source analysis, run-time analysis, and interactive mode. It's available for Data General and DEC computers. Prices range from \$5,000 to \$26,000, depending on the configuration of the system and the cross-compilers selected. A one-time license fee costs \$3,950. Revision 2.25 of DG'C' is an enhanced version of the C compiler for Data General computers. Additions include a Motorola 68000 cross-compiler, 32-bit AOS/VS I/O packet support, and debugging features.

Information Processing Techniques Corp., 1096 East Meadow Circle, Palo Alto, CA 94304-4284.
(415) 494-7500.

Circle 222

PACKAGE FOR UNIX

The MShell package is a user-assistance system for Unix III, Unix V, and Xenix for the IBM PC and PC AT. Price: \$125. It allows users to design custom-menu interfaces and control access to applications in a multi-user environment. Users can access only those applications or system options pre-designated in security-access profiles.

Business Management Systems Inc., 9526-A Lee Hwy., Fairfax, VA 22031.
(703) 591-0911.

Circle 223

PROJECT MANAGEMENT

The Maestro Plus project-management package provides users of the Maestro software-development system with tools to streamline the development of mainframe software. Price: \$17,000. Maestro Plus includes

a project-library service for administering development material and for supporting project standards, methodologies, and information flow. It also includes a project-management service for task distribution, cost control, and automated entry, generation, and evaluation of reports, tables, charts, and trends.

Four-Phase Systems Inc., 10700 N. De Anza Blvd., Cupertino, CA 95014.
(408) 255-0900.

Circle 224

PLANNING SYSTEM

IFPS 10.0 is an enhanced version of the Interactive Financial Planning System for mainframes and minis. Base price: \$69,000. The decision-support software now has a custom report writer, interrogation features, and a command language for automating applications. IFPS 10.0 is available on over 30 systems, including IBM, DEC, Hewlett-Packard, Prime, Honeywell, and Burroughs.

Execucom Systems Corp., 3410 Far West Blvd., Austin, TX 78731.
(512) 346-4980.

Circle 225

COMPILER FOR UNIX

The Amsterdam Compiler Kit for Bell Labs' Unix operating system is a package of C and Pascal compilers for Unix 68000, 8086, VAX, and PDP-11 machines. The kit compiles C and Pascal programs, and produces code for these host machines. Price: \$9,950. Complete sources of all programs (source C compiler or Unix license required from AT&T) plus instructions on necessary modifications to add a new program language or a new target machine are included.

Unipress Software Inc., 2025 Lincoln Hwy., Suite 312, Edison, NJ 08817.
(201) 985-8000.

Circle 226

PRODUCTS / SOFTWARE

INFO-SYSTEM MODELING

Define It and Create It, interactive graphics software tools for IBM 4341 mainframes, help system developers to create information systems and provide the ability to create and update all models and diagrams. Price: \$80,000 for Define It; \$30,000 for Create It. Define It stores diagrams describing the business and its information uses and needs. It automatically performs model verification and completeness and consistency checking, and provides cross-reference and error reports. Create It develops procedure models from data models, generates program code for program structures, and produces complete programs and their documentation.

Technology Information Products Corp., 12 New England Executive Park, Burlington, MA 01803.
(617) 273-5818. **Circle 227**

TELON UPDATED

Release 1.3 of Telon, an application-development productivity system for IBM's IMS/VS-DC and CICS, offers a batch-report facility that generates either Cobol or PL/1 source programs. Price: \$80,000 to \$115,000. Telon is comprised of three components: a design facility that provides interactive screen designs, an application-system generator that uses design-level source statements from the design facility to generate structured Cobol or

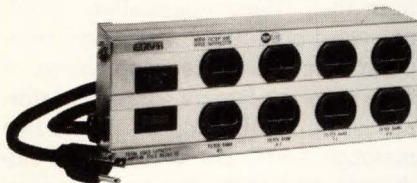
PL/1 code, and a modeling and testing facility that provides interactive testing and debugging.

Pansophic Systems Inc., 709 Enterprise Dr., Oak Brook, IL 60521.
(312) 986-6000. **Circle 228**

PROGRAM TESTER

CICS/Replay provides automated regression testing of applications and upgrades to IBM's CICS. Price: \$4,000 to \$5,000. The package operates under CICS release 1.5 or later running under DOS/VSE, VS1, or MVS operating systems.

Highlander Systems Inc., 335 S. 1000 East, Orem, UT 84058.
(801) 225-0396. **Circle 229**



ISOBAR...cleans up your line power! The most complete computer protection available

More features to prevent errors, false printout, disc skips! Only ISOBAR has 3-way spike protection, noise suppression for RFI PLUS isolated filter banks! Individual filter banks isolate each load from other loads minimizing data errors of any kind. MOV surge suppressors arrest both common mode and differential mode surges. L/C filter network rejects radio frequency noise at any amplitude. Toroidal coils!

Model IBAR 2-6 (2 outlets, 6 ft. cord) Only \$54.95	Model IBAR 4-6 (4 outlets, 6 ft. cord) Only \$79.95
Model IBAR 8-15 (8 outlets, 15 ft. cord) Only \$97.95	

Order toll free 1-800-662-5021
IN ILLINOIS, CALL 1-312-642-6871 OR MAIL COUPON

INDUS-TOOL, 325 W. Huron,

Dept. CD, Chicago, IL 60610

Enclosed is \$ _____ or charge on
☐ MasterCard or ☐ Visa Expires _____

Card no. _____

Send model # _____

Name _____

Company _____

Address _____

City _____ State _____ Zip _____

CIRCLE 80

Solve the SOFTWARE PUZZLE

At the 2nd Annual Gartner Group Forum...

SOFTWARE STRATEGIES FOR THE IBM WORLD

Gartner Group analysts and leading software experts will help you put the pieces together and discuss key issues such as:

IBM'S STRATEGIC THRUST IN SOFTWARE THE DBMS ALTERNATIVE FOR YOUR APPLICATIONS NEEDS DIRECTIONS IN PC SOFTWARE APPLICATIONS

June 24-26, 1985

Hyatt Regency in Monterey California

To register or for more information
call Lynn Bentley at
(203) 964-0096

Gartner Group, Inc., 72 Cummings Point Road, Stamford, CT 06902

CIRCLE 81

PRODUCTS / SERVICES

HEAD REFURBISHING

Crashed and worn exchangeable disk-drive magnet heads can be refurbished by Norman Magnetics. Prices start at \$30. The service is available for 2314, 3330, CDC-type SMD/CMD and Trident-type disk drives, and other types of heads.

Norman Magnetics Inc., 2431 S. Anne St., Santa Ana, CA 92704.
(714) 557-7662. *Circle 214*

DOCUMENT CONVERTER

Material stored on Honeywell Office Automation System 9-track tapes can be translated for Wang, Displaywriter,

and other systems. Price for this service starts at about 35 cents per 1,000 characters. Conversion is also available for IBM, Wang, CP/M, PC-DOS, and other systems.

Muller-Mugno Corp., 42 Broadway, New York, NY 10004.
(212) 344-0474. *Circle 215*

PRIVATE TELEX

An international network enables businesses to act as their own communications carriers. A configuration with 1-Mbyte memory, 100 Mbytes of disk space, eight communications lines, and ports for eight printers and terminals costs \$78,000. System 2 transmits messages to British Telecom

Telex for delivery anywhere in the world, taking advantage of low British rates. A 1.3-minute Telex from New York to West Germany, for example, costs 39 cents. The network, based on Bell Labs' Unix system, interfaces with a variety of communications devices and protocols.

Progressive Systems Inc., 80 Broad St., New York, NY 10004.
(212) 785-9200. *Circle 216*

EASYLINK MAIL

Memory Mail enables subscribers of the Easylink electronic-communication service to send identical or similar messages to a large group of correspondents simultaneously, directly from their telecommunications terminal, word processor, or personal computer. For a one-time setup charge of \$50, users receive free input and storage of up to 100 addresses and five message texts. Up to a million addresses and texts can be stored on each account number. A Business Reply Mailgram service is also available.

Western Union, One Lake St., Upper Saddle River, NJ 07458.
(201) 825-5000. *Circle 217*

IBM COMPUTER SERVICES

Resource Management Service provides IBM mainframe users with complete remote computer services, including dedicated large-scale cpu, network and telecommunications, systems and applications software, backup and recovery systems, operations and maintenance support, and quality control. Monthly fixed rates start at \$70,000.

Neshaminy Valley Information Processing Inc., 4850 Street Rd., Trevoze, PA 19049.
(215) 322-3770. *Circle 218*

COMPUTER DECISIONS READS MANAGEMENT

We know what the decision makers want from a user magazine and we give it to them every month

- Practical Application Stories
- Incisive Columns
- Vital Product Information
- Thorough Software Coverage
- Management Strategies

Because we deliver what they need for managing their information resources more effectively—

Management Reads

**COMPUTER
DECISIONS**
THE ONLY MANAGEMENT MAGAZINE OF COMPUTING

S E R V I C E S

DATABASE FOR IBM PC LINE

With the PC Plus service, IBM PC and PC XT users can access, retrieve, update, and manipulate information in large databases stored on SIS Sundata mainframes. Depending on the number of PCs using the service, licenses range from \$1,800 to \$3,500 for Sundata subscribers and from \$3,750 to \$7,500 for nonsubscribers. Information requests are built offline and software and hardware are provided.

SIS Sundata, Glenhardle Corporate Center, 1285 Drummers Lane, Wayne, PA 19087.
(215) 293-8009. **Circle 219**

SOFTWARE AUDITS

Manufacturing Software Systems has added eight Manufacturing Resource Planning (MRP II) Software Audits to its software-evaluation and consultation services. Fees range from \$625 to \$1,200. Audits require four to six weeks of lead time and five working days to prepare, yielding reports of about 30 pages. A variety of auditing options are available, so any software package can be assessed. The service identifies missing functions and highlights those that work improperly.

Manufacturing Software Systems Inc., 85 Allen Martin Drive, Essex Junction, VT 05452.
(802) 878-8161. **Circle 220**

CALL-IN MAINTENANCE

Harriservice, a 24-hour-a-day maintenance program for telecommunications networks, supports satellite earth stations as well as microwave, mobile-radio, fiberoptic, video, and switching systems. A typical microwave-maintenance contract for nonredundant ter-

minals costs \$1,620 annually for each of two radios. A range of offerings, from on-call service to on-site full-time network management is available.

Harris Corp., Telecommunications Networks Div., P.O. Box 1040, Melbourne, FL 32901.
(305) 724-3232. **Circle 221**

FORMAT CONVERSION

Compu-Draw transfers files across most micro operating systems and disk formats. Cost is \$4 to \$8 per input and output disk, depending on format. Destination disks are provided at no separate downloading charge.

Compu-Draw, 1227 Goler House, Rochester, NY 14620.
(716) 454-3188. **Circle 230**

Database access for Macintosh:

The Straight Talk communications program enables Macintosh users to access information from more than 28 databases on the Dow Jones News/Retrieval service. Published by Dow Jones Software, Princeton, NJ, Straight Talk is priced at \$79.

Circle 231

Configuring output systems: A free copy of "Building Output Systems," which describes 13 user environments and appropriate output-system configurations, is available through Versatec, a Santa Clara, CA-based subsidiary of Xerox Corp. **Circle 232**

Low-cost software: PC-Desk, software for the IBM PC and compatibles from Software Studios (Annandale, VA), features a calendar/reminder, calculator, address file, automatic phone dialer, and telephone directory. PC-Desk is available for a \$25 registration fee and can be copied and distributed freely. **Circle 233**

ADVERTISING OFFICES

Sales Representatives

Advertising Sales Director
Nick Bubany, 10 Mulholland Drive
Hasbrouck Hts., NJ 07604, (201) 393-6012

Sales Support Manager
Emily Ruffing, (201) 393-6023

Eastern Regional Sales Manager

Lori Lippin
(212) 245-6087, (201) 393-6024

Connecticut: Janice Healy,
(203) 938-9818, (201) 393-6025. **Pennsylvania:** Beth Haggerty, (215) 295-1992, (201) 393-6007. **New Jersey:** Cynthia Peyton (914) 352-0726, (201) 393-6007. **Mid-Atlantic:** Bonnie Breslauer (703) 379-0346, (201) 393-6025. **Southeast:** Elizabeth Medley, (404) 233-6316, (201) 393-6007

Northeastern:

Chris Dobbrow
(617) 358-4147, (201) 393-6021
Molly Ryan, (617) 443-4303,
(201) 393-6021

Midwestern Regional Sales Manager

Richard Julius
(312) 337-0588, (201) 393-6007
Mark Hickey, (312) 446-6893,
(201) 393-6025. **Texas/Southwest:** Deborah Goldsmith
(214) 669-1161, (201) 393-6024

Western Regional Sales Manager

Virginia Pohlman
(415) 332-3075, (201) 393-6025
San Francisco: Heidi Spencer, (415) 788-5119;
(201) 393-6022. **Cherie LaFrance**, (408) 475-6752, (201) 393-6022. **Los Angeles/Northwest:** Denise Sinnott, (818) 289-5425, (201) 393-6007. **Orange County/Southwest:** Kathleen Kosanovich, (213) 433-3545, (201) 393-6022; Jay Leech, (714) 492-1641,
(201) 393-6024

Tokyo: Haruki Hirayama, EMS, Inc.
Cable: EMSINCPERIOD, Tokyo

Direct Action Cards/Recruitment/ Quick Ads

Frank Marino, (201) 393-6028
Helen Ryan, (201) 393-6027

Publication Staff

Promotion Director

Rayna Gillman

Production Manager

Craig Balick

Circulation Director

Barbara Freundlich

Associate Production Manager

Richard Macnamara

Associate Promotion Manager

Claire Nemes

Promotion Copywriter

Roger A. Shapiro

Promotion Designer

Keith Whitney

Production Assistant

Frances Nelson

Fulfillment Manager

Cindy Stump

PRODUCTS / ACCESSORIES

MODULAR SYSTEM



The Datamate Taskmaster Organizer is a modular system for workstations that comes pre-configured in five different styles or custom-configured for

specific applications. Prices start at \$286. The system comes in widths of 60 inches and 48 inches and offers locking media compartments for security. A built-in acoustical panel is standard.

Dennison Monarch Systems Inc.,
P.O. Box 4081, New Windsor, NY 12550.
(914) 562-3100.

Circle 211

CRT STATIONS

Bi-level, manually adjustable crt stations come in two basic styles. Prices start at \$355. The stations allow the user to select from 14 different screen and keyboard tilts, heights, and vertical movements for optimal working po-

sitions. Options are available.

Tiffany Stand & Furniture Co., 9666 Olive Blvd., St. Louis, MO 63132.
(314) 991-1700.

Circle 212

ERGONOMIC STATION

The PC Ergonizer accommodates most personal computers and peripherals. Price: \$1,000. It has a pull-up printer shelf that raises to the proper working height for easy operation, and lockable aluminum doors to protect the keyboard, disk drives, screen, printer, and storage area for magnetic media.

Hamilton Sorter Co. Inc., 3158 Production Dr., Fairfield, OH 45014.
(513) 874-9498.

Circle 213

RESEARCH REPORT

MICRO SOFTWARE OF THE FUTURE: BIT-MAPPED AND INTEGRATED

An in-depth research report that analyzes the integrated software market, the users most likely to adopt it, and describes the dynamic integration of hardware and software. Identifies integratable applications and roles of windowing, icons, menu control, data transfer, and combined graphics/text. Examines future hardware developments expected to affect software innovation. Includes:

- SOFTWARE MARKET PROJECTIONS
- MICROCOMPUTER MARKET PROJECTIONS
- PROFILES OF KEY SOFTWARE VENDORS

240 pages; 47 exhibits; published January 1985; price \$1,650.00.

For free descriptive literature and a detailed table of contents, contact:

INTERNATIONAL RESOURCE DEVELOPMENT INC.

6 Prowitt Street
Norwalk, CT 06855 U.S.A.
(203) 866-7800
WU Telex 64-3452



Can't remember
which issue ran
that great feature
you want to
refer to now?

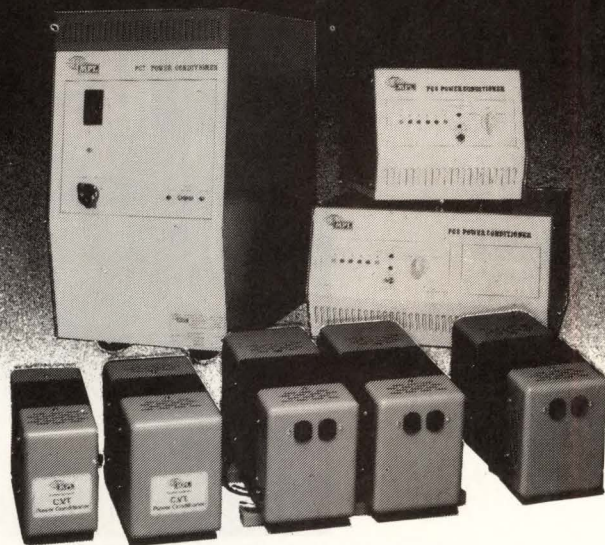
Don't despair . . . just circle the appropriate number on the Reader Service Card at the back of this issue and we'll send you a Computer Decisions 1984 Editorial Index—**FREE.**

AD INDEX

Abbott, Langer & Assoc.	141
ADR	1
Amdek	11
AT&T American Transtech	115
AT&T Information Systems/Data products	61
AT&T Information Systems/LBS-systems 85/75	8-9
AT&T Information Systems/Unix Training Div.	98
Backus Data Systems	114
BTI Computer Systems	17
Cambridge Systems Group	6
Cap Gemini DASD	146
CGA Software Products Group	31
Comdisco Disaster Recovery Services, Inc.	112-113
Compaq Computer Corp.	20-21
Compugraphic Corp.	49
Computer Associates	26-27
Computer Power Inc.	120
Control Data Corp.	103
Corporate Contingency Services	122
CPT Corp.	89
Cyberex, Inc.	150
Cyborg Systems Inc.	95
Data Aire, Inc.	107
Datagraphix	131
Diversified Software Systems Inc.	101
Dow Jones Software	42-43
DunsPlus	25
Elgar Corp.	125
Emcom Corp.	91
Execucom Systems Corp.	13
Gandalf Technologies, Inc.	57
Gartner Group	149
General Optonics Corp.	65
General Power Systems	121
Graham Magnetics, Inc.	111*
Group Operations, Inc.	140
Hayden Book Co.	155
Hayden Direct Marketing	128-129
Hayden Software	142-143
Henco Software	99
Hewlett-Packard/office	54-55
Honeywell Information Systems	38-39
Index Technology Corp.	10
Indus-Tool Corp.	149
Information Builders, Inc.	97
Innovations in Control	150
International Resource Development Corp.	152
ITT Courier	78-79
K/W Control Systems, Inc.	109
Lakontek, Inc.	96
Lee Data Corp.	135
Lexeme Corp.	144
Liebert Corp.	80-81
Mathematica	Cover 2
MCG Electronics	119
Memorex Corp.	14-15
Microframe, Inc.	19
MPL Power Systems	153
MTI Systems Corp.	147
NCR Corp.	2-3
Network Systems Corp.	85
Nippondenso of L.A.	69
Northern Business Information	100
Northern Telecom, Inc.	33-36, 58-59
Para Systems, Inc.	124
Perkin-Elmer Corp.	45
Racal-Milgo	63
SDI	51
Smokeeater, Div. United Air Specialists	100
Software Expo	137
Software International	5
Sola Electric Corp.	123
Swingline Co.	148
Tatung Co. of America, Inc.	41
T-Bar	7, 86-87
TeleVideo Systems, Inc./Terminals Div.	67
Texas Instruments	23
The Texwipe Co.	90
Topaz	73
Trax Softworks, Inc.	110
Triangle Software Co.	47
Uccel Corp./SSD	Cover 4
U.S. Postal Service	Cover 3
Wang Domestic	29
Watcom Products, Inc.	53
Wilson Jones Co.	77
Wyse Technology	74-75

*Regional Ad

POWER CONDITIONERS



The PC6 series of electronic power conditioners isolate and protect small computers and terminals from the costly effect of powerline disturbance.

The PC6 high isolation transformer is electronically switched to produce a regulated output voltage and filter circuits attenuate common mode and transverse mode noise. Anti-surge devices are also fitted thus assuring clean, dependable regulated power for sensitive loads. Available 1KVA to 10KVA, 50 Hz and 60 Hz standard voltages.

The CVT Series ferroresonant power conditioners for the smaller data processing systems regulate voltage and correct unstable and poor quality power supply.

The CVT power conditioners provide a clean stable power source for critical loads in sizes from 100 VA to 2000 VA with attenuation of mains borne noise and surge suppression available for 50 Hz and 60 Hz standard voltages.



Power Systems

MPL Power Systems plc

Bilton Way, Hayes, Middlesex UB3 3NF England
Telephone: 01-848 9871 Telex: 934110

MPL Power Systems (North America) Inc.
3011 Lincoln Avenue, Richmond VA 23228
Telephone: (804) 262 6068 Telex: 756842

CIRCLE 84

YOUR CAREER

by Mary Miles, New England Editor



Photo by Terry Hourigan

Henry Rogers believes empathy and charm boost your chances of success.

CHARM YOUR WAY TO SUCCESS

How much do the attributes of charm and grace have to do with success? A lot, according to Henry C. Rogers. Rogers, of the public-relations firm Rogers & Cowan, Los Angeles, knows about success. He represents Robert Redford, Shirley MacLaine, and Paul Newman, as well as corporate clients, like Texas Instruments and Ford Motor Co.

Throughout his long career, Rogers' formula for success has been to develop a sensitivity to the needs of others. His book, *Rogers' Rules for Success* (St. Martin's/Marek, 1984), contains what he calls "tips that will take you to the top," but the underlying message is: Always put yourself in the other person's shoes.

For Rogers, the professional who makes it to the top is usually "a gracious, thoughtful individual who . . . is sensitive to the humanity in him- or herself and others." Hard work, says Rogers, is only a minor ingredient of success; the major ingredients are drive,

will, energy, and self-control. But these important qualities must be accompanied by an understanding of "psychorelations," which Rogers describes as the way we sell ourselves to others.

Rogers spoke with *Computer Decisions* about psychorelations: the carefully honed art of being sensitive, charming—and successful.

Computer Decisions: You've said psychorelations is a combination of the words "psychology" and "people relations," and defined the concept as a tool to sell oneself to others. How important is it for us to "sell ourselves?"

Rogers: To be successful, we must relate to others, impress them, and get them to like and respect us. Why? Because being a success isn't solely dependent on an individual's accomplishments. You may be doing a remarkable job, but if your boss is unaware of it or doesn't like you, your career won't advance. It's terribly important to sell yourself. Psychorelations can be the determining factor between achieving a

small victory or great success. *CD:* By being kind, charming, empathetic, and sensitive—the basics of psychorelations—is it possible to lose yourself and become a hypocrite? Can you use psychorelations and remain sincere?

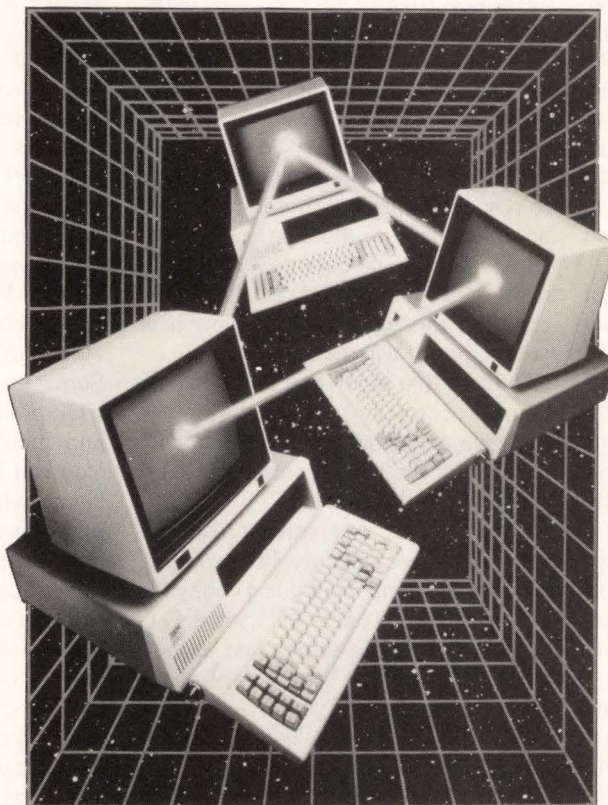
Rogers: Sometimes you're not 100 percent sincere because you're playing a game. If we discuss success in terms of playing and winning the game, we get a different perspective. A political campaign would be the closest comparison. The politician who kisses babies in supermarkets may not like doing it, but it's necessary to win votes. Success is a campaign in which you work to get people to like you, respect you, and relate to you. If you can't accomplish that, how can you achieve anything else? But when I talk about selling yourself, I'm not advocating becoming subservient or obsequious.

To "win votes" you must exert your charm so people will like you. It's not so difficult, yet many people go through

Up-to-the-minute facts on today's communications networks, in one information-packed volume.

Culled from recent issues of *Computer Decisions*, the articles collected here will prove invaluable to data communications managers who seek to better understand how today's networks are being built.

They illuminate the many changes now taking place in this rapidly growing field, and include discussions of product development and cost that will greatly benefit anyone involved in the layout and operation of a data communications network.



Contents include:

- Electronic mail
- Microcomputer executive workstations
- SNA (Systems Network Architecture)
- Distributed data processing
- Policy
- Networking
- Hardware
- Cost-cutting measures, and more...

DATA COMMUNICATIONS A MANAGER'S VIEW EDITED BY JOHN SEAMAN



\$19.95 at bookstores or order direct today.
Call 800-631-0856 (In New Jersey, 201-393-6300) or use coupon.

HAYDEN BOOK COMPANY

10 Mulholland Drive, Hasbrouck Heights, N.J. 07604

Please send me _____ copy(ies) of **DATA COMMUNICATIONS: A MANAGER'S VIEW (#6329-6)** @ \$19.95 per copy + \$2.00 postage & handling.

I enclose \$_____ (check or money order) or charge my account:

☐ VISA ☐ MasterCard

Acct.# _____ Expires _____ City _____ State _____ Zip _____

Signature _____

Name _____

Address _____

City _____ State _____ Zip _____

life without making any attempt to relate to others. They think only about themselves and their own reactions. Professionals should ask themselves, 'What kind of an impression am I making? Is it a favorable one? Am I making any impression at all?' So many professionals don't go this extra mile. They don't see the advantages of finding out what others need or think. To be successful, you must be sensitive to what's around you; you must know what people want, what they think of you, and how they react to you.

CD: What do successful practitioners of psychorelations do when they're forced to play the bad guy?

Rogers: You often have to do things that make you uncomfortable. Sometimes you'll have to tell people things they don't want to hear. But you don't have to slap them in the face with the cold facts or relay bad news in such a way that you lose an ally. To get through an awkward situation, you many have to do a bit of acting. In fact, during the struggle for success, you will constantly be acting.

You must deal with messy situations sensitively so that you achieve the best results for yourself. You can play the bad guy without inspiring hate. Again, this requires that you pay attention to the reactions and needs of others.

CD: How should we deal with our own personal shortcomings and failures?

Rogers: I'm very honest with myself when I've handled a situation badly. I analyze the mistakes I've made and try not to repeat them. I may make other errors, but not the same one. The knowledge that you've made a mistake and will again shouldn't inhibit you or cause you to take less action or avoid confrontations.

CD: In your book, you say that a person on the way up shouldn't always play "office games," but should sometimes deliberately break the rules.

Rogers: You can break the rules occasionally. As Michael Korda says in his book *Success* (Random House, 1977),

"The fastest way to succeed is to look as though you are playing by the rules but are quietly playing by your own." If you can circumvent policy to your own advantage while at the same time benefiting your organization, you can advance your career. But to do this successfully you must use intelligence and sensitivity.

Some offices have rigid caste systems in which employees must report to a specific superior. If you're in such an office and a situation arises that compels you to go over your superior's head, you must do so tactfully. To accomplish this, you need to know how your superior will react.

CD: Does that mean that if you handle yourself correctly, your superior will perceive your actions as being constructive to both the company's interests and his or her own?

Rogers: Right. You can't break the rules crudely or callously. For example, if you are blatant about going over your boss' head, your peers will think it's acceptable to do the same. And alienating your boss won't help advance your career. Remember, you're in a campaign to get people to like you so you can achieve what you want.

CD: In other words, if you break the rules, do so with charm, sensitivity, and forethought. This maneuvering sounds like hard, stressful work.

Rogers: Most people who decide to pursue success don't fully anticipate what they're taking on. They're unaware that the more successful they become, the greater the pressures and responsibilities will be and the more stressful situations they will encounter.

CD: How do you suggest dealing with a stressful situation?

Rogers: Escaping stress with a double vodka on the rocks is a big temptation, but it's just a Band-Aid. It doesn't solve the problem, and the stress will still be there. By temporarily removing yourself from a stressful situation, such as reading a book, taking a walk, or listening to music, you can avoid letting

stress get the better of you. Concentrate on what really matters. Ask yourself, "How does this problem relate to my entire life? How important is it? What's it going to do for me and to me?"

CD: One of the stresses of being a successful leader is taking responsibility for both your own and your subordinates' mistakes. You've said that those skilled in the art of psychorelations can often make the best of a bad situation, even to the extent of turning a problem into a personal opportunity.

Rogers: When a situation festers and causes chaos, productivity stops while everyone looks around for a scapegoat. Sometimes you can strengthen your own position by taking responsibility and making yourself that scapegoat. You can become a hero by taking the blame whether or not you're the culprit. This will immediately set you apart from everyone else—and if you want to be successful, you have to stand out. But you can't just take the blame; you have to offer solutions. This commands greater respect than remaining one of the masses, cowering in the corner and avoiding responsibility.

CD: But you may not find the right solution, be thought of as a blunderer, and lose your credibility. Don't you have to be careful not to endanger your own chances of success?

Rogers: Never forget that to be successful is to be careful. Any act of initiative should be part of a greater plan. You must think—you can't just go blindly off without a plan and still make it to the top. To get ahead you must carefully plan each step of the way. Luck is only a door-opener. It's what you do with your luck that matters.

CD: You've said that successful people often go the extra mile for others. You also claim that by using psychorelations you will achieve your goals because your co-workers and subordinates will want you to succeed.

Rogers: Basically, all rules for success are offshoots of the philosophy of putting yourself in someone else's shoes. There's a biblical line: "As ye sow, so shall ye reap." It's true—if you give, you'll eventually get something back. There is always a payback, and you can make it positive. That's what psychorelations is all about. □

"Success is a campaign in which you work to get people to like and respect you."

Rogers, Rogers & Cowan



DON BANKARD, PROCESSING SECTION SUPERVISOR, PG&E

“ZIP+4 codes will save Pacific Gas & Electric Company \$200,000 this year.”

MAIL THIS COUPON TO SEE HOW YOUR COMPANY CAN SAVE, TOO.

PG&E was one of the first companies to convert to ZIP+4 codes—the Postal Service’s 9-digit system for First-Class Mail®. Now its once-a-month mailing to 4 million customers is made at considerable savings. “About \$18,000 a month,” Mr. Bankard explained, “is purely ZIP+4 savings. That’s on top of our Presort savings.”

As for the conversion, “we contracted it out. And got it done for less than expected. All the conversion costs will be paid back in only 3 months.”

Find out how the ZIP+4 program can work for you. Complete this coupon. For immediate assistance or the number of a local postal customer service representative, call 1 800 842-9000, ext. 331.

Please check your line of business:

☐ Insurance, ☐ Banking, ☐ Manufacturing,
☐ Securities, ☐ Utilities, ☐ Education,
☐ Retail, ☐ Government, ☐ Publishing,
☐ Service Company, ☐ Other. And check
your yearly First-Class Mail volume:
☐ Up to 10,000, ☐ 10,001-50,000, ☐ 50,001-
100,000, ☐ 100,001-1,000,000, ☐ 1,000,000+

U.S. Postal Service, Regular Mail Services
P.O. Box 2999
Washington, D.C. 20013-2999

Name

Title Company

Address

City

State ZIP



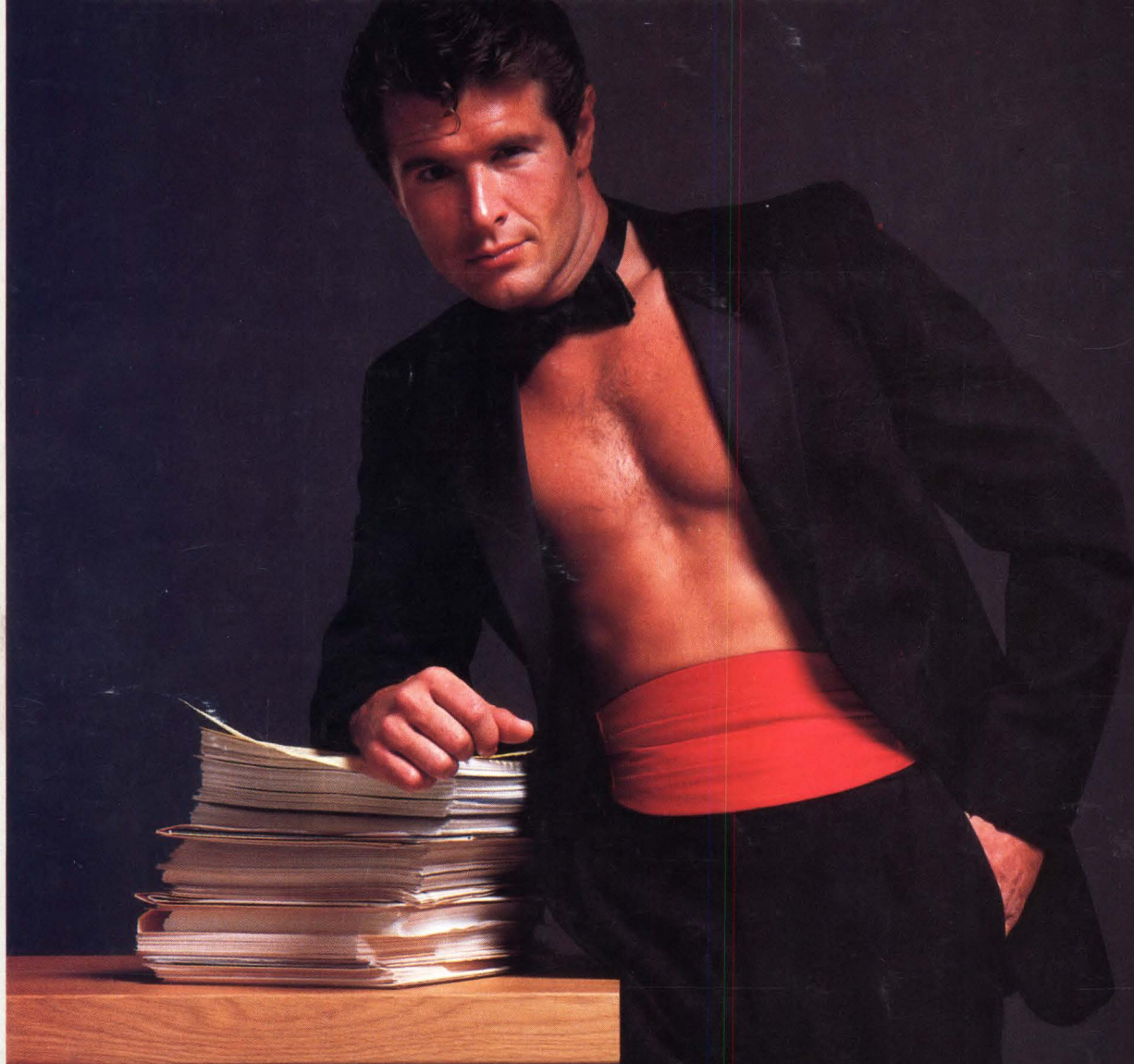
ZIP+4

1A45

ADDRESSING TOMORROW TODAY.

© USPS 1984

IF YOU DON'T WARE UCC-4, YOU'LL LOSE MORE THAN YOUR DP INVENTORY.



You'll lose your shirt in time, money and wasted management manpower. Because the bare fact is, your present manual method of tracking hardware can't cover your data center's growing needs.

You need greater inventory control. You need UCC-4, a revolutionary new software system that delivers central, automated control of both physical and financial DP inventory data. Innovative software that will streamline your data center with billing verification, inventory control, on-order tracking, cost distribution, configuration analysis, current book value tracking, procurement analysis and flexible reporting.

To find out more about our complete line of systems software products, call UCCEL today. We'll give you the shirt off our back.

FORMERLY UCC • UNIVERSITY COMPUTING COMPANY • UCCEL Corporation, UCCEL Tower, Exchange Park, Dallas, Texas 75235 UCCEL is a servicemark of UCCEL Corporation 1-800-527-5012

UCCEL
Systems software
that makes you
look good.