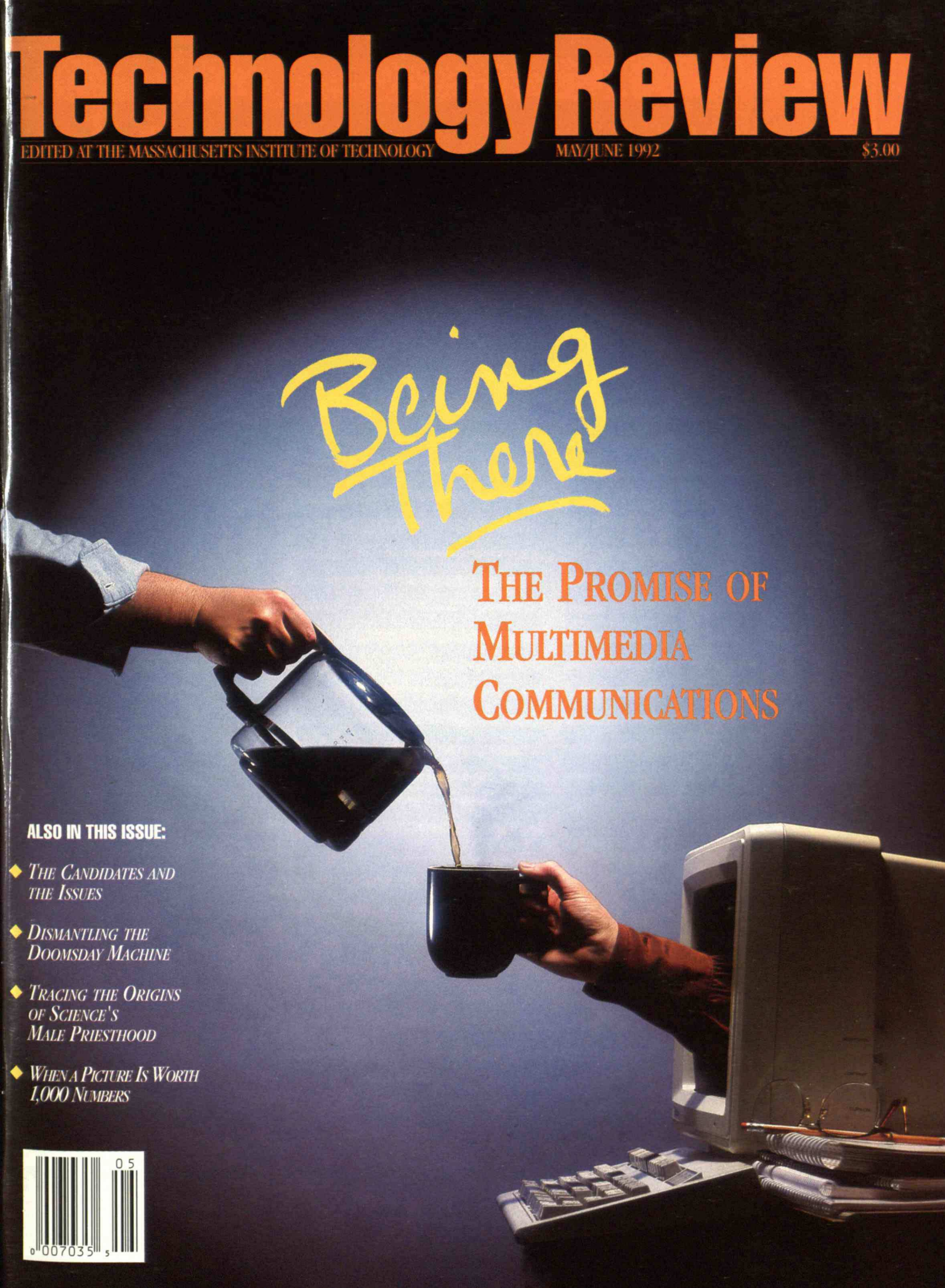
Technology Review

EDITED AT THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY MAY/JUNE 1992 $3.00



Being There

The Promise of Multimedia Communications

ALSO IN THIS ISSUE:

- *The Candidates and the Issues*
- *Dismantling the Doomsday Machine*
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- *When a Picture Is Worth 1,000 Numbers*

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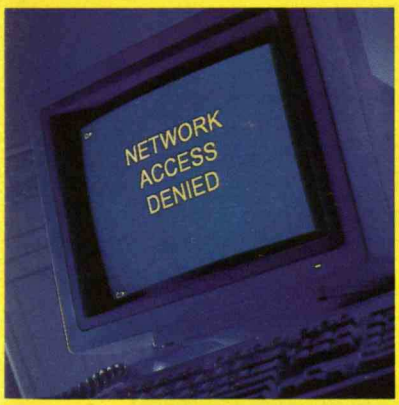

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[redacted] And what you do want them to know.

In today's competitive business environment, it's more important than ever to open your computer systems and networks. You need to open them between departments to make sure everyone's headed in the right direction. You need to open them to customers so they can access account information and place orders. And you may need to open them to a competitor if you're working on a joint venture.

But this openness poses a dilemma. Who gets to see what, what do they get to see and to what degree? Set too much security and opportunities may be lost. Set too little and one small incident could lead to disaster. So who do you see to secure your open systems? Digital, that's who.

As the company that established and secured the world's largest private data network of over 85,000 system-nodes, we have the most experience in securing global distributed systems. Experience that gives us an advantage in that we know security is more than just hardware, software and consulting. It's also practices and policies, to make sure employees know what to do with the information in your system and out of your system.

The one company that can open your systems is the one company that can help you decide who to open them to.

The best way to find out how you can get the Digital advantage is to get the most thorough briefing on security available. Call 1-800-DEC-INFO, Ext. 577 for your copy.

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TECHNOLOGY REVIEW
MAY/JUNE 1992

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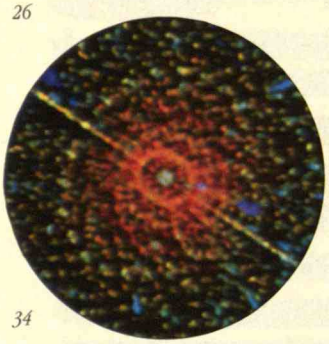

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COVER

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Art direction and design: Nancy Cahners
Computers courtesy of Baystate Computer Tutor and Repair

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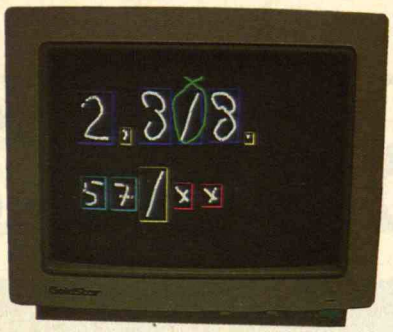

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DEPARTMENTS

Technology Review (ISSN 0040-1692), Reg. U.S. Patent Office, is published eight times each year (January, February/March, April, May/June, July, August/September, October, and November/December) by the Association of Alumni and Alumnae of the Massachusetts Institute of Technology. The editors seek diverse views, and authors' opinions do not represent official MIT policy. We welcome letters to the editor. Please address them to Letters Editor.

Editorial, circulation, and advertising offices: *Technology Review*, Building W59, MIT, Cambridge, MA 02139, (617) 253-8250; FAX (617) 258-7264. Printed by Lane Press, Burlington, VT. Second-class postage paid at Boston, MA and additional mailing offices. Postmaster: send address changes to *Technology Review*, MIT, Building W59, Cambridge, MA 02139.

Subscriptions: $24 per year, libraries and organizations $27. Canada add $6, other foreign countries add $12. Contact *Technology Review*, P.O. Box 489, Mount Morris, IL 61054, (800) 877-5230 or (815)734-6309; FAX (815) 734-4205.

Advertising representatives: Mark E. Lynch, Eastern Sales Manager, 9 Salem Drive, Saratoga Springs, NY, (518) 583-6086; The Leadership Network: SalesConcepts, Inc., 72 Spring Street, New York, NY 10012, (212) 941-8172; Detroit: Keith Olsen/Media, Birmingham, MI, (313) 642-2885.

A Macintosh to start a

Imagine you could design your own personal computer. What would it be? It would be fast, of course. Faster than your basic 486 machine. Fast enough to handle the rendering, animating, design and analysis jobs that often require a workstation.

The Apple Macintosh Quadra.

It would have immense storage and memory capacity. And it would have features like high-performance networking and accelerated video support built in.

Macintosh Quadra runs all the most powerful engineering software.

You would make it flexible enough to run any kind of application. Affordable enough to put on every engineer's desk. And as long as you're fantasizing here, you'd make it as easy to set up, easy to learn and easy to use as an Apple® Macintosh® personal computer.

But it's not a fantasy. It's a Macintosh Quadra.™

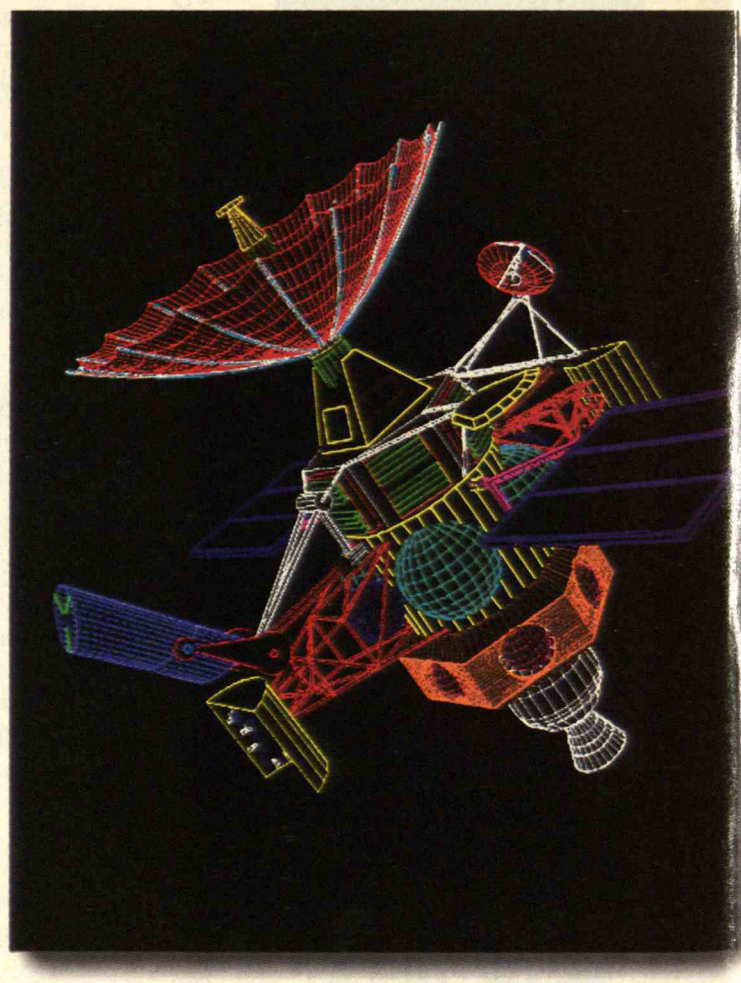
By any measure, the Macintosh Quadra 700 and 900 are two of the most powerful personal computers ever designed. Both are based on the blistering Motorola 68040 microprocessor — a single superchip that integrates a 25 MHz processor, a math coprocessor and dual memory caches.

They're up to twice as fast as any of their forebears. Fast enough to beat the chips off comparably priced 486 computers from IBM, Compaq and Dell.* And fast enough to make programs like AutoCAD, MicroStation Mac,® MacBRAVO! and VersaCAD perform at a level once seen only in dauntingly complex workstations.

Built-in 24-bit video lets you create photo-realistic images without the expense of an extra card.

High-performance subsystems provide built-in support across the board: Ethernet networking, accelerated 24-bit video** support and faster SCSI and NuBus™ slots.

You can add a 400MB hard disk to both



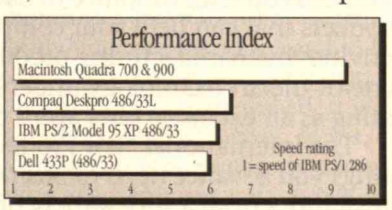
*Comparisons are based on a 1991 independent research study conducted by Ingram Laboratories that tested a variety of personal computers running applications available for both the Macintosh and Microsoft Windows 3.0 environments. **24-bit video support for up to a 16" monitor — also available for 2 created by Jerry Flynn. ©1992 Apple Computer, Inc. Apple, the Apple logo, A/UX, Mac, Macintosh and "The power to be your best" are registered trademarks and Macintosh Quadra and SuperDrive are trademarks of Apple Computer, Inc. AutoCAD is a registered trademark of Autodesk, Inc. Backburner is a trademark of Microsoft Corp. Motorola is a registered trademark of Motorola Corp. NuBus is a trademark of Texas Instruments. SoftPC is a registered trademark of Insignia Solutions Inc. RenderPro is a trademark of Strata, Inc.*

with the power revolution.

There are two Macintosh Quadra models. The 900 sits next to your desk; the 700 fits on top of it.

communications architecture lets you easily take advantage of features like distributed processing, allowing programs like RenderPro and BackBurner to utilize excess CPU cycles on other Mac computers or workstations for faster renderings.

And Macintosh Quadra fits in with the PCs you already own. The built-in Apple SuperDrive™ allows you to share files with MS-DOS PCs via floppy disk or over a network. Add a program like SoftPC and you can even run DOS software. And with Apple's fully compliant version of UNIX®—A/UX®—you can run UNIX, X Window, MS-DOS and Macintosh programs all at the same time.



Macintosh Quadra significantly outperforms 486 PCs from IBM, Compaq and Dell running Windows 3.0.

It all adds up to the kind of power that moved *PC Week* to give the Macintosh Quadra its highest satisfaction rating in the categories of overall performance, price relative to performance, expansion capability and ease of installation and configuration.†

the 700 and the 900 to accommodate the largest CAD files. And the 900 even lets you add a CD-ROM drive or a removable cartridge drive, and a disk array or more than a gigabyte of internal hard disk storage.

You can increase the memory of the 900 to up to 64MB of RAM for handling compute-intensive applications like three-dimensional modeling and stress analysis.

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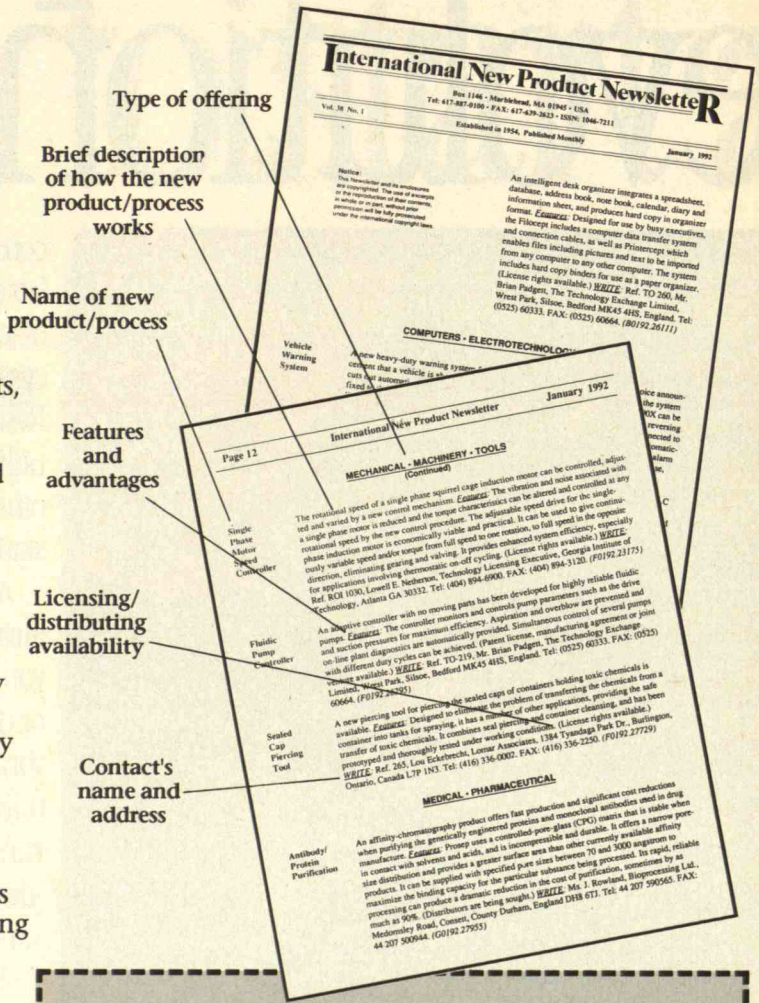

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First Line

Leading the Yankees

We've studied the situation plenty by now, and it's clear that so many Japanese companies outperform their U.S. counterparts for one basic reason: they are making better products.

Unfortunately, the response of U.S. industrialists has not been to roll up their sleeves and show the world some Yankee ingenuity, but mostly to whine about the competition or indulge in bravado. "We rattled their cage," proclaimed Chrysler chairman Lee Iacocca last January after he and the heads of General Motors and Ford returned from their trip to Japan with President Bush. The only people rattled were Americans, at the prospect of their leaders making fools of themselves in a superficial display of solidarity. "One is less ashamed by the flu," said *Boston Globe* columnist Alan Lupo, referring to the President's fainting spell, "than by the more serious U.S. illness, which is our inability to look to ourselves for the sources and solutions to our problems."

Long accustomed to being number one in a world economic order now fading, our industry leaders have become soft and complacent, seemingly unable to respond to new forces. When questioned about erosion of market share, declining profits, or major financial losses, these leaders usually cite broad issues—unsatisfactory trade policies, the propensity of Americans to spend rather than save, the sorry state of U.S. public education—that are largely and conveniently someone else's business. Their own operations are assumed to be just as fine for today as they were in the past.

When the Conference Board and Industrial Research Institute polled nearly 100 R&D executives last year, these leaders waxed typically Pollyannaish. They "showed a surge of optimism for the future of America's technology-driven businesses," said the survey director, and a belief that the U.S. will be world leader in technology in the year 2000. Similarly, when members of the Institute of Electrical and Electronics Engineers were polled by Gallup, a majority held that the United States would maintain its lead over Japan in nine out of twelve areas of technology into the next century.

Such whistling in the dark does not much impress our competitors, who are detached enough to critically assess the U.S. situation, skeptical of empty claims, and understandably tired of all the bashing. Lately, they've retaliated with a little of their own. "U.S. workers are too lazy. They want high pay without working," said the speaker of Japan's lower house of parliament in January, and they are of "inferior quality." Shortly thereafter, the prime minister himself joined the chorus, asserting that America's tradition of "producing things and creating value has loosened too much."

In industry as in baseball, good players can't win without savvy managers.

Many of our leaders were shocked—shocked!—by such statements and hastened to note that the productivity of U.S. laborers exceeds that of the Japanese. But the criticisms appeared to be directed less at the folks on the factory floor than at management. American blue-collar workers in Japanese-run factories—Honda in Ohio, Nissan in Tennessee, and Sony in California, for example—generally make products rivaling those manufactured at facilities in Japan. It is U.S. *executives* who appear to be lacking insight and direction, who are "too lazy," who are failing to use their country's indigenous resources—natural and human—to fuller advantage, yet who carp relentlessly about the competition.

The same tendencies can be seen in government. "Blaming foreign nations for our economic woes is standard fare for elected officials because it is invariably well received—particularly in areas of high unemployment," said Paul Tsongas in his campaign manifesto. "It is a lot more rewarding politically to bash imports than to suggest that there may be fault in attitudes or strategies here at home. [But by] continuing to persist in denial we put off the necessary self-examination and rethinking that will lead to true competitiveness."

Such a result can only occur with targeted no-nonsense collaboration among leaders in government, industry, and academia—the forging of a uniquely American industrial policy. Its time has clearly come as the hands-off "free-enterprise" policies of Reagan and Bush produce only further slippage.

Where such collaborations now nominally exist, they offer sizzle but no steak. For example, the president's "National Technology Initiative," launched in February with much government fanfare on the campus (but without the sponsorship) of MIT, essentially offers industry a look-see at research already performed at the federal labs, and little else.

We could do a lot better. Sen. Joseph Lieberman (D-Conn.), writing in the *New York Times*, argues that "in alliance with business, the government should take as much as possible of the $22.5 billion spent yearly at the federal laboratories and refocus it on commercial and industrial products and technological development." Lieberman's national industrial-renewal effort would encompass tax incentives, loans, and federal investment in industry, reorganization of government entities such as the Defense Advanced Research Projects Agency to directly serve economic growth, and a serious effort to "focus on the 22 technologies the White House has designated as critical to growth and then did nothing about."

An overhaul of the once invincible and still mighty U.S. industrial engine will entail facing some unpleasant truths and adopting some new approaches to manufacturing and marketing. This will not be as easy or as instantly satisfying as bashing the foreign threat du jour. But it is well within our means. ■

—Steven J. Marcus

On January 14, 1992 we opened a billion dollar plant in the heart of Detroit. Some say that's stupid.

We say it's responsible.

Our Jefferson North plant is a commitment to the quality of the product and the community.

We could have taken the easy way out, like a lot of companies are doing these days. We could have built our plant in a field outside a small town to keep operating costs down.

Instead, on January 14th we opened one of America's most advanced auto plants in the heart of Detroit. We're keeping thousands of jobs where they're needed most, in the inner city. And providing millions in taxes.

Jefferson is going to show the rest of the industry how to produce world-class quality, and improve the quality of community life. For us, it's a good feeling. For the consumer, it's a good product.

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We think the new Jefferson plant will set new standards of environmental responsibility. We're using breakthrough technology to reduce the amount of waste materials in the earth and air.

Rather than having the overspray from painting cars end up in a landfill, at Jefferson the paint overspray will be collected, recycled and can be used as underbody paint.

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Chrysler technology isn't just for the cars we build. It's for where we build them.

Jefferson will be as efficient as any import operation in Tennessee or Timbuktu.

We're operating Jefferson on a lean production system. And that means lean in every step of the manufacturing process.

Our people function as a team, not as specialists working separately. Everybody together from the start, solving problems to avoid downtime later on. It makes sense and it saves dollars.

We have 206 robots at Jefferson, doing everything from welding body panels to applying the