INFORMATION RESOURCES ∞

BOOKS & REPORTS

Competitive Advantage;
Michael E. Porter;
The Free Press, New York, NY,
557 pp., $23.95.

The author, a professor at the Harvard Business School and a member of the President's Commission on Industrial Competitiveness, picks up where his earlier *Competitive Strategy* left off. That book presented techniques for analyzing industries and competitors, while his new one shows how a firm can actually create and sustain a competitive advantage in its industry. Porter explains how managers can evaluate their competitive position and implement the specific actions necessary to improve it. He introduces the value chain and shows how managers of technical as well as other companies can use value-chain analysis to separate the underlying activities a firm performs which ultimately lead to competitive advantage—designing, producing, marketing, and servicing its product. Using value analysis Porter shows, for example, how to create competitive advantage through corporate strategy by harnessing interrelationships among related industries. (Japan's NEC Corporation, for example, has exploited interrelationships among its telecommunications, computer, electronic component, and consumer electronics businesses to become a world-class competitor against the likes of IBM, AT&T and Philips.)

Intrapreneuring;
Gifford Pinchot III;
Harper & Row, New York,
224 pp., $19.95.

This book is aimed at those who wish to innovate within an organization (or despite it) as well as those managers who would like to create an environment supportive of innovation and "intrapreneuring." Consultant Pinchot tells the would-be intrapreneur how to choose an idea, how to get it approved, where to find the money for it, and how to make the project succeed. Through such case histories as 3M's Post-it Notes, Intel's magnetic bubbles, and IBM's personal computer, he provides guidelines for building an intrapreneurial corporation—"the true Renaissance Corporation of the 1980s."

Managing Creative People;
Albert Shapero;
The Free Press, New York, NY,
252 pp., $20.75.

Drawing upon extensive research, case studies and his own consulting experience, Prof. Shapero makes specific suggestions for: Hiring professionals (when using reference networks note that good performers tend to be members of social circles that have values and norms that elicit high performance); motivating professionals (very productive people need and seek diversity; deliberate steps should be taken to encourage and assign diverse tasks, including a number of projects, a mix of administrative and professional work, and a mix of functions); performance evaluation (treat the formal evaluation system as only one part of a comprehensive feedback system in which frequent, informal feedback sessions bear the brunt of the coaching and criticism effort); enhancing creativity (managers should assign tough deadlines but stay out of the operating details of a project; creative people resist closure because they may see new possibilities as the project unfolds).

Managers will also learn how to cope with—and prevent—the problems of technical obsolescence, "burnout," and "midcareer crisis" that can cut the productive life of the professional worker. (Shapero's chapter on creativity was digested in the March-April issue of *Research Management*, pp. 23–28.)

Who Owns Innovation?
The Rights and Obligations of Employers and Employees;
Robert A. Spanner;
Dow Jones-Irwin, Homewood, IL,
149 pp., $27.50.

Silicon Valley attorney Spanner warns that because courts have failed to provide consistent guidelines for proper conduct in the fast-growing area of trade secret law, technology companies and their employees increasingly risk the possibility of disastrously expensive lawsuits. He examines the conflicts that stem from the joint possession of valuable information, and gives corporate managers and employees step-by-step advice on how to preserve corporate information secrets and negotiate the legal minefields of trade secret law. The book starts with an overview of trade secrets, followed by an analysis of their social and economic policy implications. An extensive section then details the types of information considered proprietary and lists the measures companies have employed to successfully keep them secret. The book also covers confidentiality and invention assignment agreements, as well as the severance of the employment relationship. There is a detailed index of topics and legal cases.

How To Keep Product Costs in Line;
Nathan Gutman;
Marcel Dekker Inc., New York, NY,
208 pp., $35.

This seventh volume in a series on cost engineering describes practical ways to reduce operating costs in manufacturing organizations. It offers an approach to cost analysis and introduces several techniques intended to help engineers and manufacturing managers identify high cost elements of a product. Several chapters deal exclusively with human relations.

The Making of a Profession:
A Century of Electrical Engineering in America;
A. Michal McMahon;
IEEE Press, New York, NY,
303 pp., $39.95.

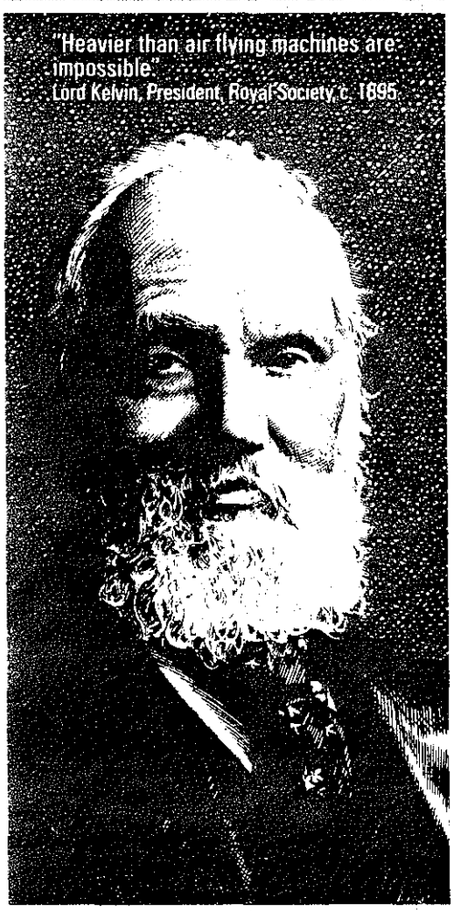
Historian McMahon recounts the growth of the electrical engineering profession by following the careers of representative engineering figures like Charles Steinmetz, David Sarnoff and the educator Frederick Terman, and by examining pivotal events in the history of the American engineering societies and the collective profession. The history of the American Institute













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Along the way, there were those who knew all the reasons these things couldn't be done. Fortunately, there were those who knew enough not to listen.

Tomorrow is taking shape at a company called TRW.

TRW

A Company Called TRW

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Adm. Inman In Command At Consortium

MCC Research Team Ready for Business

By Michael Schrage
Washington Post Staff Writer

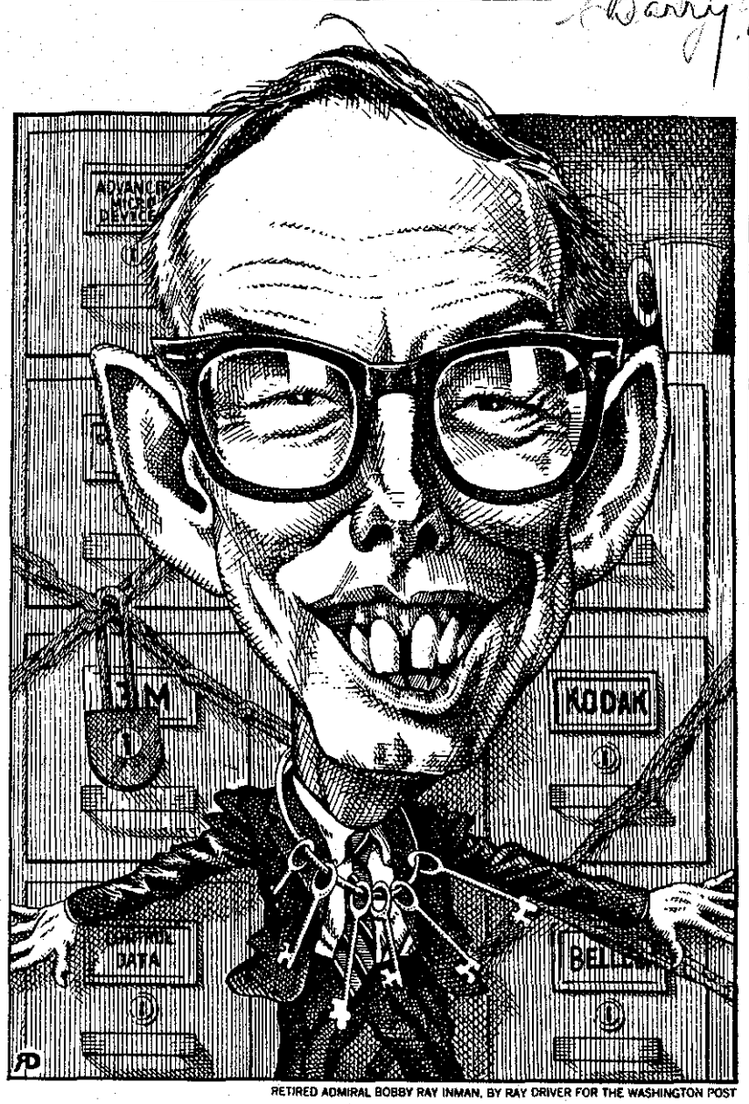
AUSTIN, Tex.—With the skill and savvy that once made him Washington's consumate high technocrat, retired admiral Bobby Ray Inman has turned his talents from the classified to the proprietary.

The man who managed this country's most sophisticated national security technologies—he ran the National Security Agency from 1977 to 1981 and served as deputy director of the CIA—has glided smoothly to the private sector, where he now bids to become the unofficial U.S. ambassador of innovation.

"Much to my surprise, I haven't needed to adapt my management style at all," said Inman, with a disarming deployment of his gap-toothed grin. "The management skills I've acquired through trial and painful error are serving me well here."

Inman is chairman and chief executive officer of MCC—the Microelectronics and Computer Technology Corp. research consortium—which presents itself as the American computer industry's response to Japan's highly publicized "Fifth Generation" computer challenge for global supremacy in the information-processing industry.

The creation of Control Data Corp. Chairman William C. Norris in 1982, MCC was seen as new cooperative venture by American companies to achieve breakthroughs in areas of basic research crucial to the evolution of information technology. The idea was that member companies would finance establishment of the venture, underwrite its research programs, and lend it some of their top scientists and engineers. Norris argued that a combined approach would prove more cost-effective than any one company's individual efforts in this risky and capital intensive industry.



RETIRED ADMIRAL BOBBY RAY INMAN, BY RAY DRIVER FOR THE WASHINGTON POST

In many respects, MCC is the forerunner and model of what may prove to be the next generation of industry research and development—a cooperative of companies that share first-level research and development efforts that later will become proprietary products. MCC has about 300 employes and an annual budget approaching $100 million but has not disclosed what is being spent on specific programs.

"Mid- and small-sized companies simply don't sustain long and broad-scaled research in an industry where the prospect for technological surprise is high," Inman said.

Inman, who had retired from public service in July 1982, was assiduously wooed by Norris and other MCC members. He formally came on board in January 1983.

A superb politician with an ability to implement an agenda, he surprised and annoyed many of the members of his board by consistently rejecting many of the researchers initially offered up by the member companies as simply not good enough.

Moreover, although MCC's seven research programs—which range from semiconductor packaging to new computer architectures to parallel processing—originally were supposed to be run by scientists from MCC member companies, it turns out that six of the seven are independent and highly re-

See MCC, D8, Col. 1

MCC Team 'Right on Schedule'

MCC, From D1

pected scientists individually recruited by Inman himself. Clearly, Inman has not lost his Washington-honed touch for assuring a comfortable level of autonomy.

Flashing the smile, Inman declines to view it that way, saying only that "we've been damn lucky" in getting the people he's recruited.

"I think he's a very effective leader," said MCC board member Samuel H. Fuller, Digital Equipment Corp.'s vice president for research and architecture. "He's strong and outspoken, and when you're trying to get 21 corporations to cooperate on something, that's what you often need to be."

Another board member, who asked not to be identified, asserted that Inman liked to create or impose a consensus rather than seek one. But he conceded that Inman was "very, very effective at managing us and managing our expectations."

Though MCC has been in operation for less than three years and has yet to publish any significant research, it already has captured some of the top researchers in computer science and a reputation as an intellectually exciting place to work. Teams of computer scientists are exploring futuristic forms of computer software that would imbue computers with a "common sense" capability at problem solving, for example. Other specialists are looking at computer-aided approaches to help crowd hundreds of millions of circuits on a silicon chip. Inman unabashedly asserts that MCC "is clearly a winner."

But MCC's member companies and Inman all concede that the real test of the consortium is just now beginning: Will MCC's research and development efforts ultimately translate into innovative products and services that give its members a technical edge in the marketplace?

"We've completed the start-up phase and it's now down to the business of research," said DEC's Fuller. "The hard problem is going to be technology transfer."

"My primary worry is technology transfer," said Inman. "I can't guarantee that all these companies will use these technologies."

In fact, that issue is of such paramount concern that Inman formed an ad hoc committee to force MCC members to address the technology-transfer questions within their own companies.

Even in the fast-paced high-technology industry, effecting a smooth transfer from basic research to prototype to production model has proven to be one of the thorniest problems facing American companies. Academic commentators on industry from Robert Reich to Ezra Vogel all comment that Japanese industry's skills at quickly bringing innovations to market give it a competitive edge.

"There's one resource that's scarce and that's time," said Palle Smidt, MCC's senior vice president of plans and programs. "There's more competition out there now. Revenue life cycles are down, product life cycles are down."

That creates an inherent tension in MCC, Smidt concedes. As computer product life cycles shrink with the pace of technological change, figuring out what constitutes useful long-range research becomes increasingly difficult. When does "long range" research blur into something with immediate commercial possibilities?

Inman and Smidt are leaving that up to the individual companies to decide.

"Our shareholders now have uninhibited access to the developmental know-how in their programs," said Smidt. "And in 12 to 18 months I think we'll see experimental uses and elements of our output in commercial use."

However, Inman concedes that MCC can succeed brilliantly as a research and development organization but ultimately fail in its mission if member companies are unwilling or unable to accommodate themselves to the flow of technologies that emerge from the consortium.

Indeed, Inman and Smidt agree that, with 21 major organizations participating, the odds are great that not all of them will prove adept at swiftly assimilating MCC technology. That could mean that four or five of the most aggressive corporations with a clear technology transfer plan reap the commercial benefits of the investments made by the other members. In essence, the slower companies effectively will have subsidized their competitors' advantage. That could lead to several companies choosing to drop out of the consortium.

In other words, MCC's very success could sew the seeds of discord. Inman says the consortium "could be viable with 14 or 15 members," but he hastens to add that he doesn't expect more than two or three of the 21 companies to drop out over the near term.

Actually, Inman seems more intent on attracting and keeping key researchers than mollifying certain shareholder problems. "I've tried to give them the feeling that they're the members of a club—an exclusive group, an elite group," far more so than he's done with his shareholders, Inman said.

The Austin location has not proven detrimental in attracting researchers from California or Ivy League climes, and Inman cleverly has secured a diversity of shareholders ranging from Boeing Co. to Eastman Kodak Co. to Minnesota Mining & Manufacturing Co. to assure that researchers have a broad market of companies for their innovations.

A random sampling of researchers affiliated with MCC reveals that they are happy with their working environment, adequately compensated and optimistic about the prospects for the application of their research.

"I think Inman has set the right tone for this place," said Doug Lenat, an artificial-intelligence researcher who came from Stanford University and the Xerox Palo Alto Research Center.

However, the tone also includes an overwhelming concern for the proprietary nature of the research. Elevators are equipped with special locking devices that prevent individuals without the appropriate card keys from having access to certain floors at the Austin complex of black glass buildings. Indeed, the seven programs are carefully partitioned so that companies not funding certain programs are expressly prohibited from receiving information from them.

Similarly, researchers—who traditionally have published papers and presented their findings in conferences—are reluctant to disclose anything beyond the sketchiest details of their work.

Indeed, Inman declines to publicly disclose the research milestones of MCC, arguing that, as a private enterprise, the organization is under no obligation to do so. Consequently, though, there is no real external way then of measuring how well MCC's disparate research programs are doing.

DEC's Fuller insists that "It's at least as ambitious as Japan's Fifth Generation" goals and that the 10-year research program is "right on schedule."

Inman visibly bristles at suggestions that this concern for secrecy reflects his national security background. He points out that he has a responsibility to protect his shareholders' investments—more important, he stresses that the lines between basic and applied research and development have blurred to the point that more information has to be considered proprietary and protected accordingly.



BOBBY RAY INMAN
... skills "serving me well here"

However, it may well be that MCC—as a consortium—helps define the new level of proprietary emphasis as companies increasingly rely on secrecy as well as innovation to protect a technical edge in the marketplace.

Rather than see secrecy emphasis as a threat to innovation, Inman sees it as a part of the reality of intensifying global competition.

The current membership is Advanced Micro Devices Inc., Allied Corp., BMC Industries Corp., Bell Communications Research (Bellcor), Boeing, Control Data , Digital Equipment, Eastman Kodak, Gould Inc., Harris Corp., Honeywell Inc., Lockheed Corp., Martin Marietta, 3M, United Technologies Corp., Motorola Inc., NCR Inc., Rockwell International Corp. and Sperry Corp. Reportedly, General Motors Corp., flush with its acquisitions of Electronic Data Systems Corp. and Huges Aircraft, also is exploring an MCC membership.