

GENERAL  ELECTRIC  
**Monogram**  
MARCH-APRIL 1980

**Modernizing  
the  
world's  
aircraft**

**PLUS:  
Issues for '80;  
GE goes  
to the Olympics;  
Sparking an  
automotive  
renaissance**



# GENERAL ELECTRIC Monogram

March-April 1980

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The Monogram's purpose is to keep its readers informed on General Electric activities so that they may more effectively represent the Company in its relationships with the public. It is published bi-monthly by Corporate Public Relations Operation—Douglas S. Moore, Vice President. Editorial supervision is by David W. Burke, Manager, Corporate Communications, and J. Hervie Hafler, Manager, Corporate Editorial Programs. Request permission to reprint articles from the Monogram Editor, Fairfield, Connecticut 06431. Copyright 1980, General Electric Company.

## THE COMPANY

# Issues for '80

In a time when political sophistication is increasingly expected of people in business, what public issues are receiving emphasis by GE leaders? Here's a survey.

General Electric people who want to help strengthen their Company's favorable reputation today have to be ready to do more than talk up the quality of GE refrigerators or the superiority of GE gas turbines. Increasingly, speaking up for General Electric means discussing knowledgeably the public issues that affect the Company.

What issues are receiving major emphasis by GE leaders here at the outset of the 1980s? A recent invitation to address the student body of his alma mater gave GE Chairman Reginald H. Jones the opportunity both to stress the importance of informed political involvement and to summarize the main contenders among current public issues affecting the business environment.

"The successful managers of the 1980s," he told members of the Wharton School of the University of Pennsylvania, "are, of necessity, going to be more politically sophisticated than their predecessors. The economy is becoming politicized, the government is becoming an ever more pervasive factor in economic affairs, and it's just foolish to think that this situation will reverse itself in the near future. So, while the critics of business will undoubtedly do their best to deny our right to participate in the formation of public policy, the fact is that we have a large and important constituency of customers, investors and employees whose needs must be represented. And we have to represent them as skillfully and responsibly as we can."



Citing critical issues facing U.S. business managers this year, GE Chairman Jones recently addressed students at the Wharton School of the University of Pennsylvania.

As for the most critical issues of the day, Reg Jones listed these priorities:

**Inflation:** "The first and overarching problem is pernicious and pervasive inflation. It is undermining our capital structure, tearing at our social fabric, and eating away at our future."

In his view, the GE Chairman said, "the fundamental cause of our chronic inflation is the inexorable growth of the public sector at the expense of the private sector. When government grows faster than the tax base that supports it, inflation is inevitable." Money supply has to be increased to pay the government's debts, and transfer payments and government services outgrow the economy's ability to pay for them.

"When the situation is compounded by such exogenous factors as the price increases of the OPEC cartel and the impact of crop failures in other parts of the world on our domestic food prices," he added, "we have a deep and intractable problem."

What worries the GE Chairman most is that "people feel they are learning to live with inflation. It is becoming institution-alized. Instead of trying to wrestle inflation to the ground, just about everybody is taking the path of least resistance and looking for ways to live with inflation."

Reg Jones raised the fundamental question: "Does this nation really have the will power and self-discipline needed to unwind inflation?"

**Energy:** "In retrospect," he told the Wharton school body, "it appears that the booming expansion of the world economy in the 1950s and 1960s was an oil boom. The use of imported oil increased at exponential rates in Europe and Japan as well as the United States from the middle '50s to 1973—and this cheap energy was the basis for unprecedented worldwide economic development, expanding world trade and some very generous programs of social welfare."

Then, in the mid-'70s, he pointed out,

*(continued next page)*

“demand began pressing on supply, and the oil-producing nations took advantage of the opportunity to induce a dramatic series of price increases.”

Chairman Jones expressed the belief that managing the energy problem will be a major challenge to this country’s political and business leadership. “The days of low-cost energy are gone, and we are all going to have to accept that. We must make our homes and factories more energy-efficient. We must shift to other energy sources—coal and nuclear power in the decades immediately ahead, and synthetic fuels and renewable sources in the longer term.”

**International instability:** The energy crisis, Jones said, is inducing dangerous strains in the international order. “A certain desperation enters the picture as nations struggle for their share of the available petroleum and groan under mountains of debt. The Middle East offers tremendous temptations to the Soviet Union, either through subversion or direct military action.”

He pictured the United States, disillusioned by the Vietnam experience, as allowing “not only its military strength but even the will to exert leadership to erode badly. Thus much of our attention in the 1980s will be directed toward rebuilding our defenses and restoring the political, economic and military position of the U.S. as the leader of the free world.”

His view of the nation is that “we have no need or desire to dominate others, but no one else can provide the leadership required to maintain a degree of international stability in which the world can peacefully work out its problems.”

**Drop-off in productivity:** U.S. productivity gains, which ran about 3% a year in the 1960s, eroded to only about 1.5% a year in the 1970s. “By the end of the decade, they had vanished entirely. Productivity actually declined 1% in 1979.”

The principal reason for the decline? “Business investment in new technology and new plant equipment has dropped off sharply. Tax policies that favor consumption over production, and actually penalize savings and investment, have taken their toll.”

The GE Chairman feels that the problem is finally recognized in Washington, “and a major redirection of our resources can be expected in the early 1980s as we modernize our industrial machine.” He added that the

coming decade will be “strongly oriented toward supply-side economics, and business managers are going to be giving much higher priority to productivity improvements and new technology.”


**Trade deficits:** For three years in a row, he noted, this country has run staggering trade deficits on the order of \$30 billion a year. “Oil imports, which came to \$59 billion last year, account for much of that persistent deficit.”

What can be done? “The only way we can pay the escalating cost of imported oil (which we are going to need for years to come, no matter how fast we move on domestic energy supply) is through rapid expansion of our exports. This will not be easy because we are now competing against very large and sophisticated multinational companies based in Europe and Japan, strongly supported by their national governments. And, as the decade goes on, we will meet vigorous new competition from industrializing nations such as Brazil, Mexico, Taiwan and South Korea.”

The meaning for business managers, he said, is that, in the 1980s, they are “going to have to think and operate internationally, not only to expand their share of world markets, but also to maintain their position in the world’s largest market—the U.S.A.”

**Excessive government regulation:** “Government intervention in the market has been a perennial problem for business, but in the 1970s the problem really got out of hand,” Chairman Jones commented. “Very aggressive new regulatory agencies—EPA, OSHA and EEOC—were established, and the powers of other agencies were greatly expanded.”

Some of this may have been required, he acknowledged. “We all needed to be pushed on clean air and equal opportunity. But there was no need to mire down American industry in a great swarm of detailed, punitive and economically senseless regulations and litigations that have added years of delay and mountains of cost to the process of doing business.”

**Responsible business ethics** provides the essential base for business action on all these fronts, the GE Chairman made clear. “If the manager of the future wants to hold the respect of his peers and keep his company out of the toils of the law, he will be absolutely scrupulous in matters of law and ethics, and make sure that these same standards are upheld at all levels of the organization.” 

# The human side of 'Going International'

Strengthened GE programs for foreign service employees — plus 'reverse flow' options for foreign nationals to work in U.S. and elsewhere — are producing skilled GE internationalists.

**B**unk" is Bob Haughton's favorite reply to any suggestion that, as a General Electric employee working abroad, you risk going forth and falling off the edge of the career world.

"Anyone telling you that foreign service employment means slipping out of the career mainstream—that 'you can't go home again'—doesn't have his facts straight. A great many Company people at all levels have been gaining foreign business experience and returning home, and—what's more—domestic GE components are finding that these people bring unique assets to their operations."

Robert J. Haughton ought to know. As manager of Employee Relations, Organization and Manpower Operation for International Trading Services Operations in Westport, Conn., he tracks the careers of International Sec-

tor's salaried people who work offshore.

"A 'new' General Electric is surfacing—one truly internationalized in scope and perspective," Haughton observes. "Hundreds of U.S.-based GE people each year now are traveling abroad for the Company—and hundreds of foreign-based GE people are traveling to the U.S.—and they're all becoming better acquainted with their foreign counterparts. The outlook for the overseas-based professional has improved greatly."

He continues: "Last year, about 37 percent of the Company's total earnings was produced by international business. More than 40,000 domestic GE jobs are directly the result of exports, and 10,000 more jobs depend on other aspects of our international business. Offshore businesses' strategic importance to General Electric is obvious."

*(continued next page)*

## Foreign service assignments: where they worked...

### The Philippines, etc.

J. Richard Stonesifer, now General Manager—Carboloy Systems Dept. In 1973, President and GM—GE Portuguesa; 1975, President and GM—GE Philippines.



"Developing countries sometimes lack a business infrastructure; you have to rely more heavily on strategic plans and personal ability to 'grow' your own managers. You're forced to be resourceful."

### Japan

R. Howard Annin, Jr., now VP—Northeastern Regional Relations. In 1973, named President and General Manager—General Electric Japan Ltd.



"The Japanese assignment not only gave me exposure to GE's product businesses, but taught me the value of personal relationships in conducting business, which is part of my current job."

### Singapore

Nelson F. Britt, now Manager—Latin American Employee Relations, Organization and Manpower Operation. In 1971, named Manager—Singapore Relations.



"A foreign job requires you to empathize with people who have a different perspective. The best approach to overseas relations issues is a blend of U.S. and local standards."

Haughton emphasizes that, for most people, a foreign assignment turns out to be a highly stimulating experience, and one that puts the individual on a very steep learning curve. Recognizing that, the Company has opened up more opportunities for employees from other countries to gain experience in the U.S. or in other nations.

“GE’s U.S. foreign service employee (FSE) program, by itself, no longer suffices in today’s international business climate,” he says. “Local nationals (LNs) have moved into all levels of GE management and staff positions offshore, and these LNs as well as third country nationals (TCNs) also can benefit by exposure to job experience in other countries. We thus are pursuing a *variety* of approaches in seeking to promote a free flow of people throughout the GE world system.”

He adds, “Since the majority of the Company’s Strategic Business Units today are involved in international business, the need for people with international background is accelerating rapidly. This foreign exposure needn’t be derived solely from working in overseas locations—domestic assignments involved with international business are extremely valuable as well.”

Improved compensation programs for GE

people working abroad have been implemented by International Sector and by Strategic Business Units with significant dealings overseas, as well as by Corporate operations.

“Soaring inflation, a weakened dollar and tax penalties make it expensive to employ Americans in certain countries,” observes Herbert C. Mezick, manager—Foreign Service Employee Policies and Practices of GE Technical Services Company in New York. “To help employees withstand the financial burdens posed by moves to such countries, GE constantly reviews its compensation practices to assure equitable treatment for offshore people.”

Mezick notes: “It frequently costs GE *two-to-three times as much* in pay and allowances to maintain a U.S. individual overseas. Housing and income taxes are particularly damaging factors. We continually monitor world trends and apply a ‘keep whole’ adjustment for our employees.”

“Keep whole,” he explains, is foreign service lingo for “keep the family whole,” and refers to providing a net income comparable to the earning power of a similar position in the home country.

It’s Mezick’s job, together with International Sector employee relations people, to design competitive employee compensation

## Foreign service assignments: where they worked...

### Brazil

Charles J. Vaughan (center), now Manager—Corporate Audit Staff. In 1974, named VP—Finance, General Electric do Brasil.



“As chief financial officer for GE in Brazil, I was responsible for many different corporate finance matters—broader experience than that afforded by many domestic finance management jobs.”

### Italy, etc.

Christopher T. Kastner, now Executive VP and Sector Executive—Technical Systems and Materials Sector. 1970, COGENEL head; 1973, GM-Europe Bus. Div.



“Responsibilities in a foreign assignment are often greater than those of a similar U.S. job, if only because of the remoteness of headquarters. That builds confidence in making on-the-spot decisions.”

### Mexico

Jack C. Acton, now Staff Executive—Industrial Products and Components Technology Operation. In 1976, President and General Manager—GE de Mexico.



“Mexico’s economy, like those in many industrializing nations, was quite volatile while I was there. I saw how important it is to understand the needs of these countries to serve them effectively.”

and benefit policies for the Company's FSEs and TCNs—the latter being GE employees who are nationals of countries other than the U.S. and who are employed outside the U.S. or their home countries. "Employees are counseled on eligible benefits prior to their leaving for assignments in another country. If necessary, we supplement their entitlements to assure that benefit levels are not eroded as a result of transfers."

Mezick admits that "with today's grassfire inflation and declining dollar, it's often difficult to gauge what comparable remuneration levels should be, and we must be vigilant to keep pace with the cost of living."

He mentions that a subcommittee of the President's Export Council—an advisory group headed by GE Chairman Reginald H. Jones—recently recommended the U.S. align its tax policy with that of its major foreign competitors, none of which now taxes its citizens who meet overseas residency tests.

Mezick continues: "The successful training and employment of LNs and TCNs in Company operations worldwide has somewhat eased this problem for General Electric. It has given GE a variety of staffing options and economic alternatives. These foreign nationals know the local scene, are often multilingual, and have a cultural empathy with local associates. They understand a particular country's protocol, and can bring a special expertise to bear on their work."

**GE's International Personnel Council**, now in its ninth year, brings together employee relations and organization and manpower managers who meet annually to help strengthen every aspect of international careers. Bob Haughton organizes the sessions, which are attended by representatives of Strategic Business Units with substantial international business. The next meeting is scheduled for June 9-13 in Caracas, Venezuela.

"Council members continually assess and update the human-resource needs of their businesses," he remarks. "We work together to identify areas of mutual SBU international interest in order to develop and implement needed employee policies and practices. Between the meetings, our task forces address questions on recruiting, training and placement and tackle such key concerns as employee compensation."

Recommendations for change are made to International Sector, the SBUs or Corporate management, as appropriate.

"International markets are growing more rapidly than those in the U.S., and one of the council's top priorities is to assure the talent to meet these opportunities," Haughton says.

"Developing better procedures for spotting and retaining 'high potentials' and 'promotables' throughout the GE network is a vitally important Company mission," states Fairfield's Carrol D. Houser, International Sector's consultant with Corporate Executive Manpower Operation. "We want employees to approach their international assignments with some assurance of career continuity—and with the understanding that upon successful completion of an overseas assignment, domestic job opportunities will be available to them."

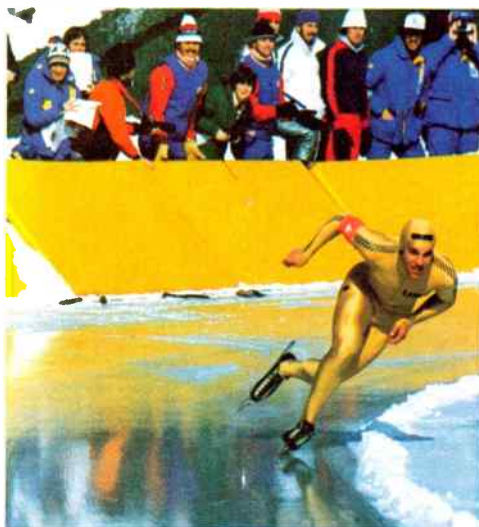
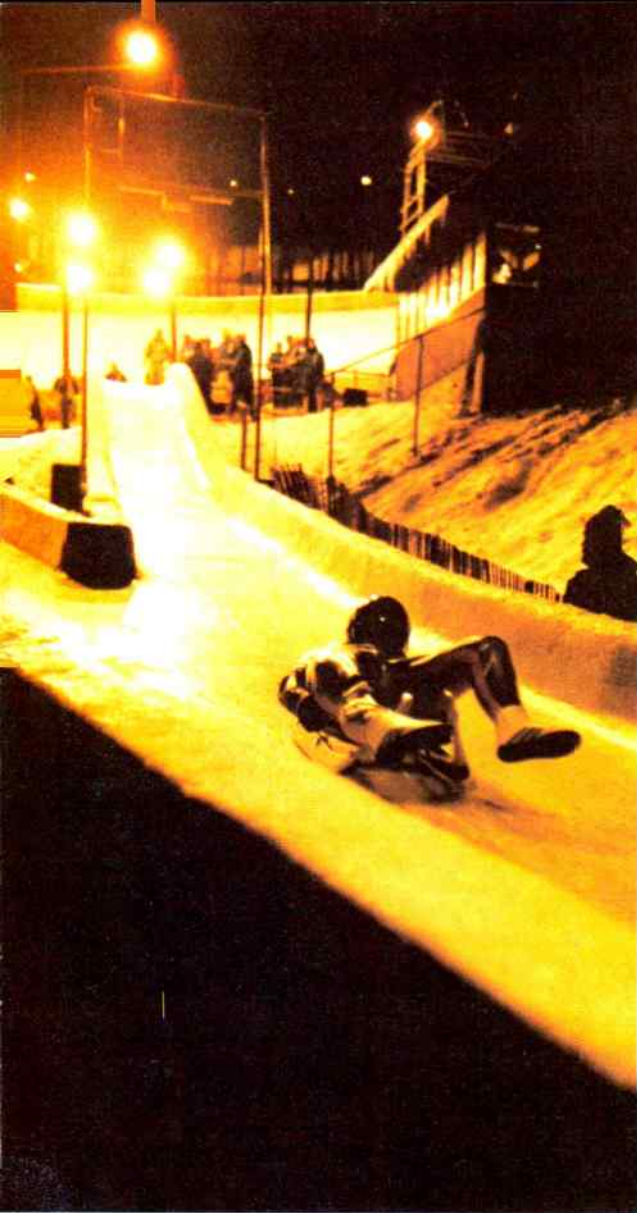
Annual manpower reviews and "Buy Back" agreements are just two of the programs which International Personnel Council members are implementing in their businesses for overseas employees. For example, to help assure that individuals on assignments abroad are included in domestic manpower planning, these employees are now being identified as a separate topic in both the overseas and domestic GE components' annual manpower reviews.

Return placement agreements, or "Buy Backs," are gaining favor with more and more SBUs as a way to assure high-quality job candidates and to obtain international experience for their operations. Buy Back agreements are made between individuals and their domestic business management *before* undertaking a foreign service assignment.

Houser notes: "Of course, Buy Back agreements do not replace other GE placement efforts, and employees are free to scout out other GE opportunities."

**Ambitious hiring and placement goals** for overseas employees of International Sector have now been established, says Haughton. Formal repatriation guidelines were adopted by the Sector for its FSEs in 1978. Procedures provide for six-month advance notice to them of their assignment termination, with up to three of those six months in the offshore location to wrap up the job, close out personal affairs, and work with employee relations people in initiating job search activities. A quarterly newsletter, *FSE News—Viewpoint*, provides overseas employees with career tips.

"As a career-builder, international assignments for GE people are definitely a high road and not a byroad," he concludes. "Literally dozens of top Company managers can look back on an international phase in their careers." ■



Eric Heiden (above right) goes for the gold while another Olympian risks race down luge course under GE lamps. At right, Mobile Radio's Tony Hou, interpreter for the Chinese, with luge official.

While star athletes such as Eric Heiden, Ingemar Stenmark, and Hanni Wenzel were making the headlines, a great many General Electric people and products were working behind the scenes to make the XIII Winter Olympics succeed.

Take Thomas V. LeFebvre, a manufacturing product manager for Syracuse's Heavy Military Equipment Department. As alpine operation director,

LeFebvre spent 18 months setting up the downhill, slalom and giant slalom races—a job he had been training for all his life. LeFebvre grew up in Lake Placid, learning the techniques of racing. His father was the honorary starter for the alpine events. In 1960, LeFebvre had a crack at making the U.S. ski team. Thus directing the alpine races, even at an Olympian level, was second nature to him. "Besides," he says, "it gave

me a chance to 'come home.'"

His task entailed course maintenance, making sure the equipment was operating, that all gates and flags were in proper order, and that the crew of 400 was in place on Whiteface Mountain. It was a benefit to LeFebvre that more than a dozen workers were from GE, among them his brother, Richard, a manager for Rockville's General Electric Information Services Company.





# GE and the Olympic gold rush

People and products from around the Company played a major role in the XIII Winter Games.



Thomas and Edie LeFebvre relax after the men's downhill. A GE manager from Syracuse, LeFebvre was Olympic alpine director. Right: artist Colette Stemple and her Lexan® plastic "stained glass."

The best seat at the Olympics had to belong to Pittsfield's Mary Smith, an Ordnance Systems secretary.

Sitting in a building at the finish line of the 400-meter speed skating oval, she was involved with recording results. She saw Heiden's five gold medal performances.

"It was fantastic," she notes, "the way Heiden set one Olympic standard after another. When he was on the ice, all

work stopped — and when he broke the 10,000-meter record, the uproar rivaled that given the U.S. hockey team."

Other GE volunteers were Burlington's Stephen E. Krakosky, an Armament Systems Department buyer, responsible for testing bobsled timing devices; Schenectady's William P. Kornrumpf, electrical engineer for Corporate Research and Development, in charge of alpine quality control; and

*(continued next page)*



Lexan resin ski boots from Dynafit, worn here by Russian ski star Vladimir Makeev, carried the Austrians to four medals.



Waterford's Michael T. Ryan enjoys opening ceremonies.



GE Olympic products included mobile x-ray (above) at medical clinic and TermiNet® III printer at Lake Placid finance office.



Lynchburg's Tony Hou, an engineer for U.S. Mobile Radio Department, who was an interpreter for the first Chinese team to compete in the Winter Games.

Hou, born 50 miles from Peking, spent his youth in Taiwan. He pursued graduate studies in the U.S. and worked summers at Lake Placid, where he married Elizabeth Marvin. It was his knowledge of Mandarin Chinese and his Lake Placid connection which put Hou into the Olympics.

"I was very honored," he says, "and very excited, too."

Alongside GE people, GE products played an Olympic role.

Hou's own department, Mobile Radio, for example, sold 300 handheld radios, 85 vehicle-mounted units and eight base stations, and provided a site manager, four technicians and a service shop. The eventual unsnarling of the transportation problems was assisted with mobile radios.

Medical Systems Business Division was the official supplier of x-ray equipment. At the medical clinic inside the Olympic Village, home of the athletes, two GE AMX mobile x-ray units were installed along with x-ray supplies.

Both units were used extensively. The injury to U.S. figure skater Randy Gardner was diagnosed by one of the units. Gardner and his partner Tai Babilonia had to withdraw after he fell several times in warm-up. After the x-rays, the U.S. team physician remarked: "The seriousness of this injury hasn't been stressed enough. The fact that he [Gardner] tried at all is a testimony to how courageous he is."

The bobsled and luge runs, the only such courses in the Western Hemisphere and the world's only refrigerated ones,

were chilled and lighted with several GE products:

- a 2,000-kva padmounted transformer, two motor control centers, a switchboard, a panel-board, circuit breakers, arresters and capacitors from Power Systems and Industrial Products and Components Sectors;
- at the luge, 94 250-watt and four 400-watt Lucalox® lamps from Cleveland's Lighting Business Group; and
- hugging the bobsled run, 132 400-watt Lucalox lamps.

Other GE Olympic products:

- four Lexan® plastic sheets from Pittsfield's Plastics Business Division, used as "stained glass windows" at the Lake Placid Center for Music, Drama and Art—artist Colette Stemple captured the spirit of competition in her paintings;
- twenty-one 400-watt Multi-Vapor® and 21 400-watt Lucalox lamps surrounding the 400-meter speed skating oval;
- 34 1/2-kV voltage and current transformers metering power to Whiteface Mountain, and meters at the Olympic Village, from Somersworth's Meter Business Department;
- and a TermiNet® III high-speed printer from Waynesboro's Data Communication Products Business Department, plugged into a GE Mark® Service host computer, which handled financial statements for the Olympic Committee.

On the day Austrian Leonhard Stock won a gold medal, flashing through the downhill on the most colorful of GE products—Lexan resin ski boots from Dynafit—Schenectady's Eugene H. Gauss, a course maintenance volunteer, stood next to the run. An engineer with the Knolls Atomic Power Laboratory, Gauss summed up the feelings of many GE people at the Olympics: "As a ski fan, I wouldn't be any other place." **AN**

# Five Phillippe awards for public service

For aiding the physically handicapped, the ill and the disadvantaged, five General Electric employees have been chosen winners of the 1980 Gerald L. Phillippe Awards for Distinguished Public Service by the GE Foundation. The awards are named for the late GE board chairman, who was a public-service leader.

Philadelphia's John J. Prinkey, Re-entry Systems Division visualizer artist, was cited for writing and illustrating a layman's booklet that explains the symptoms, causes and treatment of cancer. The three-year project, which included interviews with cancer specialists, has a National Cancer Institute recommendation.

Pittsfield's H. David Evans III, Ordnance Systems Department engineer, was recognized for improving the learning environment of deaf people. As a Scoutmaster, he helped a deaf boy become a Scout. As a science teacher for the deaf, he developed a book of more than 100 visually oriented science experiments for hearing-impaired people.

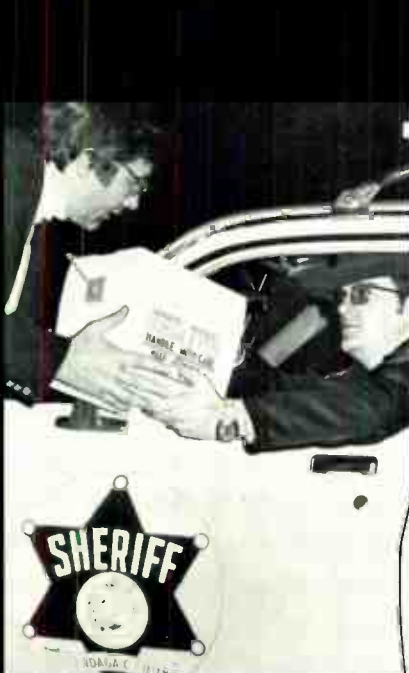
Syracuse's Robert L. Way, Undersea Electronics Programs Department contract administrator, was named for saving a foundering summer camp for speech- and hearing-impaired children, for advising the Ithaca, N.Y., Speech Clinic, and for leadership in such Lions Club programs as eye banks for the blind.

Schenectady's Jean S. Watkins, Corporate Research and Development Center secretary, was chosen for bringing emergency health care to the rural Adirondack mountains. In Edinburg, where the nearest doctor is 15 miles away, she trained emergency rescue squads, taught residents first aid and set up a mobile testing unit.

Evendale's Edward Howe, Aircraft Engine Business Group senior engineer, was cited for developing programs to help underprivileged people in Cincinnati. He founded a church in the inner city, and his pastoral work included counseling people who suffer from alcoholism and drug addiction. **AV**



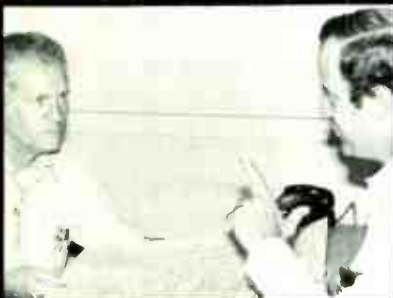
John J. Prinkey



Robert L. Way (left)



Jean S. Watkins



H. David Evans III (right)



Edward Howe (right)

# Monographs



**Jones visits Saudi Arabia.** As a recent traveler to the Middle East, GE Chairman Reginald H. Jones met with national leaders and businessmen to discuss trade opportunities.

Here, he is shown inspecting factory processes at General Electric's new joint-venture plant in Jeddah, Saudi Arabia, where distribution equipment is assembled. The venture company, JEDAC, is jointly owned by GE and a Saudi family, Jamjoum. With Jones (l to r): Mohamed Saleh Jamjoum and GE's Arthur L. Law, the plant's managing director.

In 1975, GE opened its first office in Saudi Arabia and now has sales offices throughout the kingdom. Besides JEDAC, GE has started three other j-vs there, which provide the local investment base for continuing the Company's export sales growth. Recently, GE was awarded an order for an 800-mw electric power project near Riyadh which, when completed, will be the world's largest crude-oil-fueled gas turbine generating plant.

Vice Chairman John F.

Burlingame and VP Paolo Fresco, general manager of Europe and Africa Operations, accompanied Jones on the trip.

**Pro-nuclear kaffeeklatsches.** Sara Morabito would be the first to tell you she's no political activist. A 20-year employee with GE, she is a Los Gatos, Calif., five-time grandmother



with a sweet smile, who combines work with fun. But she does have deeply held beliefs—and last spring, deciding that there was much misinformation and confusion about nuclear power, she asked her employer, Sunnyvale's Advanced Reactor Systems Department, if she could organize groups to speak out for nuclear energy.

Her idea was to bring people together with nuclear engineers in small gatherings and reach persons who want more facts about nuclear power. She sold her idea to her bosses and eventually won top-level industry acceptance for the project.

What began as informal kaffeeklatsches in San Francisco Bay area homes soon evolved, under Morabito's lively leadership, into a nationwide program to promote public education on—and acceptance of—

nuclear power. Her brainchild, Nuclear Energy Education Day, was held Oct. 18, and more than 100,000 people took part in 4,300 events nationwide.

"I believe in the future of nuclear energy for America," Morabito states. "Nuclear power is a clean, safe, necessary and abundant energy source—a vital part of the energy mix which includes coal, oil, solar and the others." She adds, "Thanks to everyone who is helping us, we continue to have an active campaign underway. You can tell it's citizen-oriented. Our meeting locales vary from school auditoriums to living rooms to backyard jacuzzis!"

**Forum on the future.** Their red parkas emblazoned with the initials "TMOT," the stu-



dents had been invited to Freedoms Foundation at Valley Forge, Pa., for three days of learning and sharing. All were high-school juniors—from 70 Philadelphia-area schools.

The occasion? General Electric's second Annual Town Meeting on Tomorrow (TMOT) seminar, which was recently sponsored by Aerospace Business Group and designed to "equip young adults with a better understanding of tech-

nology and the free enterprise system, help them plan future careers, and encourage them to interact with peers of different ethnic backgrounds.”

Activities ran nonstop. Tours were conducted through the Company’s Space and Re-entry Systems Divisions, the U.S. Mint and a local TV station. One-to-one exchanges took place with sports celebrities and civic and industry leaders, including Louis V. Tomasetti, Senior VP and group executive of Aerospace Business Group.

Commented host Robert Norwood, manager of Aerospace Finance Operation: “The response from students was again highly favorable, and their vision of ‘big business’ improved dramatically.”

**Learning to talk again.** Imagine waking up to discover you cannot utter a sound. It is impossible to clear your throat, let alone sing or laugh. You try writing notes, but quickly realize how slow this is. Discouragement sets in.

It’s a personal triumph for GE pensioner Harold Steinbacher (left) of Ft. Wayne that—despite having his larynx removed because of throat cancer—he didn’t give up. Without a voice box or vocal cords, he learned to talk again. He speaks in a somewhat raspy, yet understandable, voice that is the result of years of practice.

What’s more, Steinbacher is now a volunteer speech instruc-



tor with the American Cancer Society, teaching fellow laryngectomees how to talk again. Here, he and a class member demonstrate how one person can learn more about speech by feeling the vibrations in another person’s throat.

Steinbacher estimates that “I’ve taught nearly 70 students, besides giving countless programs for local professional groups and schools.”

**Where the buffalo roam.** Four years ago, Schenectady’s Joan Case saw an article in a local newspaper about raising buffalo and read it to her husband, Charac “Chic” Case, a senior designer at Knolls Atomic Power Laboratory. They contacted the National



Buffalo Association and eventually bought three buffaloes, a bull and two cows.

The Cases, part-time farmers in Melrose, N.Y., had been raising sheep. “We became interested in buffalo because of the meat’s popularity in restaurants,” remarks Chic Case. “It’s better than beef—higher in protein and with less cholesterol.” Each buffalo eats about one-half bale of hay a day plus dried corn, apples and grass.



**Imported oils.** Two dramatic oil paintings—“Dawn” by Maxfield Parrish and “Torch Race” by N.C. Wyeth—have been purchased by the GE Lighting Institute at Nela Park in Ohio. The paintings, acquired from the same New York art gallery, were commissioned by General Electric in 1918 and 1936, respectively.

The more valuable of the two, notes Institute manager James H. Jensen, is the Parrish work, the first of many of his canvases to appear on the old Mazda Lamp calendars. The painting by Wyeth, father of Andrew Wyeth, depicts the Grecian Olympics held in 1000 B.C.

**Honors.** Freedoms Foundation has awarded GE its 1979 National Award in the television category for the special, “John Denver’s Rocky Mountain Reunion.” Fairfield’s David W. Burke, manager of Corporate Communications, accepted the award during ceremonies in Valley Forge, Pa.

- Recently elected to membership in the National Academy of Engineering were Vice Chairman Edward E. Hood, Jr., and Dr. Bertram Wolfe, VP and general manager, Nuclear Fuels and Services Division.
- James R. Birle, VP and general manager of Far East Area Division, has been elected to the executive committee of the ASEAN-U.S. Business Council, under the auspices of the U.S. Chamber of Commerce and the Chambers of Commerce and Industry of ASEAN (Assn. of Southeast Asian Nations).

# Closing the robot gap

Industrial robots are in use in every GE Sector, working to boost Company's productivity.



A robot application center has been opened by GE's Industrial Sector in Ft. Wayne. Shown: center's John Behuniak (l) and Bruce Newell.

As General Electric moves into the 1980s, intense competitive pressures, both at home and abroad, are causing increased interest in the use of industrial robots as a way to reduce costs and grow productivity. These are not the terrifying automatons of a brave new world or the cute humanoid ones of "Star Wars," but widely useful machine tools not different from a lathe or other piece of manufacturing equipment—except that they can be programmed.

As of January, GE had 70 robots in operation throughout its various Sectors, performing monotonous material-handling jobs as well as jobs involving repeated lifting and exposure to smoke, fumes or high temperatures.

Japan and East Germany have taken the lead in installing robots. Japan has some 7,000 sophisticated robots in place and is producing units at the rate of 2,000 a year. In contrast, the U.S. has about 5,000 advanced robots and a production capacity of 1,300 a year. In some U.S. quarters, concern is mounting about a "robot gap," as foreign companies post record

productivity gains using flexible automation.

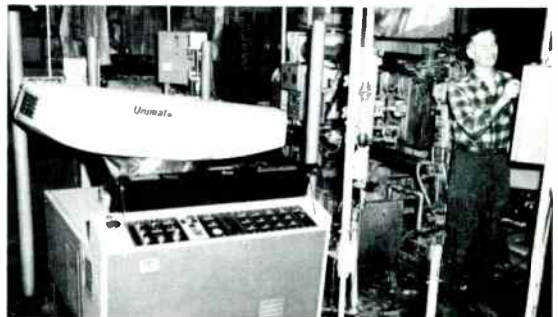
"Good progress is being made in using robots for such unpleasant or hazardous tasks as spray-painting, handling hot forgings and lifting heavy castings," says Schenectady's Dr. Jules A. Mirabal, who manages GE's Corporate Consulting Services manufacturing center.

Now, new microprocessor-based robots are showing up in other areas of industry where they are performing such functions as assembly operations. No longer are they simply programmable arms with low intelligence and crude hydraulic muscles. Some can pick up an egg. Others have TV cameras that pan and tilt to provide a stereo-like view.

Dr. Mirabal's group is pushing hard to build GE's competitive strength by promoting robot applications. The Schenectady Applications Center has the largest robotics lab in the U.S. Some 50 GE plants now use robots, making the Company one of the nation's leaders in this field. By the end of this year, GE expects to have 120 robots in place.



An industrial robot (l) lifts stator laminations at General Purpose Motor plant in Linton, Ind. Below: Meter plant robot used in die-casting at Somersworth, N.H.; and right, a spray-painting robot in Major Appliance facility at Cicero, Ill.




The trend toward robots in U.S. industry is a combination of "push and pull," observes Mirabal. "On the one hand, it's severe competition from abroad, where productivity is increasing eight-to-ten percent annually. On the other, it's the electronics revolution, the great reduction in the price of integrated circuits and their effect on computerized controls."

Building awareness of the effective use of robots is the full-time mission of the Applications Center's Vernon E. Estes, who manages CCS' robotics laboratory. "Since 1976, we have staged a series of 'show and tell' events to help GE components understand where they might add robots. Workshops and seminars have been held; manuals and newsletters have been published. A 'Rent-A-Robot' program allows components to try before they buy."

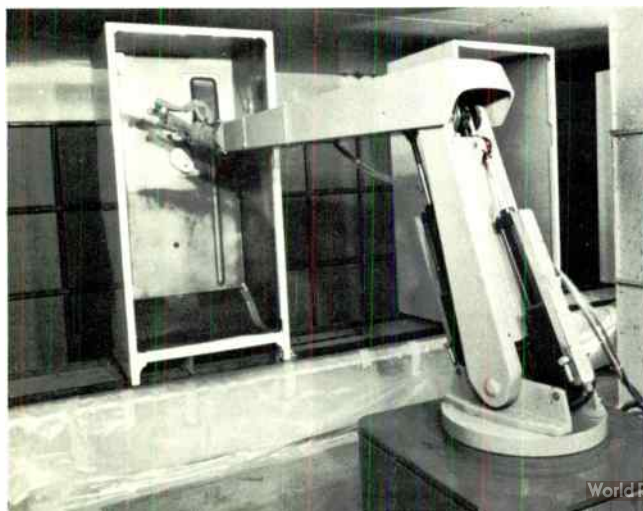
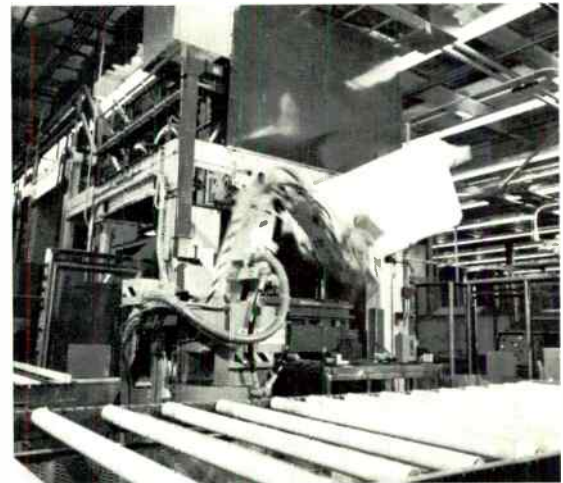
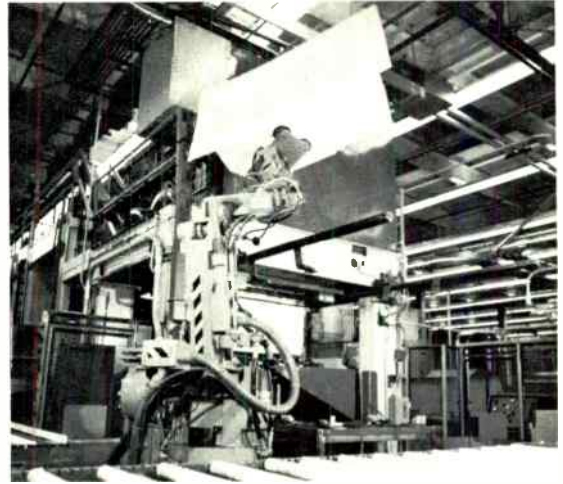
Around the Company, extensive robot applications are taking place. Louisville's Major Appliance Business Group, for example, has some 35% of GE's total robots, operating in 23 different applications.

In February, Ft. Wayne's Motor Business Group opened a Robot Application Center, designed to speed the "technology transfer" of robotics within its operations. Robots at the center are available for manufacturing people to operate and evaluate the practicality of installing them at their plant locations.

The center's Bruce D. Newell, Motor Technology Operation project engineer, says: "By doing test mock-ups of robot applications, we hope to convince plant personnel to introduce robots. Our objective is to prove to people that robots are a sound investment."

He concludes: "Robots are on the same threshold of growth that computers were in the early 1950s. Other industries are rapidly joining GE in adopting robotics, and it's estimated the number of robots in the U.S. may jump to 17,000 by 1985 and to 70,000 by 1990." 

At "pierce and trim" press in Louisville, Ky., a robot picks up refrigerator liner from conveyor, turns it 180 degrees, and deposits it onto a press feeder. Each liner eventually will be merged with a case to form a refrigerator shell.



**T**he 1970s were a hectic time for Detroit, with car companies facing such pressures as government emission standards, gas shortages and consumer complaints over high service costs. Federal and state regulations have since been passed which are shaping the cars of tomorrow. This changing environment, moreover, is leading to exciting new opportunities for General Electric's engineered materials, as auto makers pull out all the stops to achieve the new goals.

"Carmakers this year achieved an average of 20 mpg for their vehicles, but they've got to boost that to 27.5 mpg by 1985," observes Charles R. Carson, Senior VP and group executive of Engineered Materials Group.

"The kinds of down-sized cars they need to get there must be designed in the 1980-83 period," he says.

"They've got to obtain major weight reductions, while providing occupant safety, and still be able to sell cars. All of this affords GE an ideal opportunity to help the car companies minimize the cost penalties of meeting the regulations—while increasing the performance and styling appeal of those down-sized bodies."

This giant-sized challenge obviously appeals to Engineered Materials Group, since it is well positioned with a broad product line. Sitting in his Columbus, Ohio, office, Carson notes: "Engineered materials have been identified as an emerging core business for the Company, as GE shifts its emphasis toward the fast-growing materials and services

businesses. Group sales to the automotive industry have more than doubled in the past five years. We expect this sales trend to continue."

He adds: "In October, we broke ground for GE's Automotive Materials Center near Detroit, which will more than double the size of the present center and give all our busi-

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**GE engineered materials are bringing a new look to auto showrooms, by helping carmakers design more efficient vehicles.**

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nesses a good shot at cashing in on part of the \$1-billion-plus automotive market. We now have seven GE Technical Centers in the U.S. and Europe, where customers can get a 'hands-on' look at what our products can do, and in April, we'll open a new center at the foot of Mt. Fuji in Japan."

**Innovative design ideas that help carmakers in their quest for improved fuel economy, reduced emissions, better performance and lower manufacturing costs is the full-time mission of Eugene J. Thomas, manager—Automotive Materials Operation. He is in charge of Detroit's expanding**

GE automotive center for Engineered Materials Group. "In a town of metal-oriented customers, the supplier who brings in ideas that work in lighter-weight, cost-effective materials wins the checkered flag. The trend in auto design favors our kinds of tough, high-performance products. We're building the prototypes needed to lead auto companies into new applications."

*Plastics.* "One out of every five pounds of Plastics Business Division's U.S. sales now goes into the automobile—a multimillion-pound business opportunity," Thomas says. "With pollution-control equipment raising under-the-hood temperatures to 380 degrees, there's been major penetration of GE plastics into some 32 automotive applications, including ignition systems, electrical switches and connectors, transmissions and gears.

"Lexan® plastic halogen headlamps saw their first applications in 1980 on Ford Lincolns. The expertise of GE's Miniature Lamp Department made the Ford specification a reality. To improve gas mileage, designers must lighten the weight—and three of GE's sealed-beam halogen headlamps weigh only as much as a single glass unit. Auto bumpers molded of Lexan resin are now in use on European Fiats and Triumph TR7s, and other Lexan resin uses include instrument panels, mirror housings, window plugs, turn signals and body trim.

"A Noryl® resin fuse block is found on the complete 1980 lines of Ford and Chrysler cars. Noryl headlamp bezels, introduced in last year's Dodge

*(continued on page 18)*



# Sparking an automotive renaissance



GE is helping auto makers meet 1985 U.S. fuel standard: (above) 1980 Ford Thunderbird with more than 20 lbs. of GE plastics; (counter-clockwise) prototype Oldsmobile Cutlass instrument panel with GE plastics and laminates; Fiat bumper fascia made of Lexan® plastic; Noryl® plastic wheel covers; camshaft milled with Carboloy® ceramic-coated insert; 1980 Datsun with Lexan turn signals and back-up lenses; and 1980 Lincoln Continental with Lexan halogen headlamps.



Omnis and Plymouth Horizons, have been added to GM's Cadillacs, and this resin is also being used on wheel covers and hubcaps of numerous cars and trucks.

"Valox® and Arnox® resins are well suited for a variety of tough under-the-hood applications where heat, salt and chemicals are a problem. Both Ford and GM have specified the new Valox 700 resin for their high-energy ignition systems. Genal® molding compound, with high strength and heat resistance, is a prime candidate for replacing cast iron and aluminum parts."

**Convincing 'metal benders'** in Detroit to not only *think plastics* in auto design but to consider other engineered materials as well is the primary reason for expanding General Electric's Detroit demonstration facility. Thomas cites other product areas where the Company is making headway:

**Silicones.** "In California, General Motors has installed a computer-controlled catalytic converter which uses GE silicone gel on all of its cars. This rubber potting compound has excellent electrical properties, protects against vibration, and adapts well to temperature changes. Another current use for silicones: Silmate® formed-in-place silicone rubber gaskets, which can cut materials costs and add design flexibility. They're ideal for valve covers, oil pans and axle covers."

**Laminated materials.** "The 'Big Three' in Detroit are all using GE laminates for their fuel-injection and emission-control systems. GE laminates also are used in all of GM's AM radios; the dash panels

and keyless door locks of Ford's LTD and Continental Mark IV; and in various GM internal illumination panels."

**Carbology.** "Camshafts can now be milled with Carbology® ceramic-coated inserts, which cut costs by increasing tool life and eliminating the need for regrinding."

**Diamonds.** "Compax® diamond blank tools allow more efficient production of such components as pistons, manifolds and transmission cases. Chrysler is using them in producing various pistons and housings, and Ford in producing alternator slip rings and manifolds."

**Insulating materials and batteries.** "Such insulating items as GE wire enamel and encapsulants can be used in cars' starters to prevent stalls. Electronic-based dashboard control and entertainment systems can be made more reliable with GE rechargeable batteries."

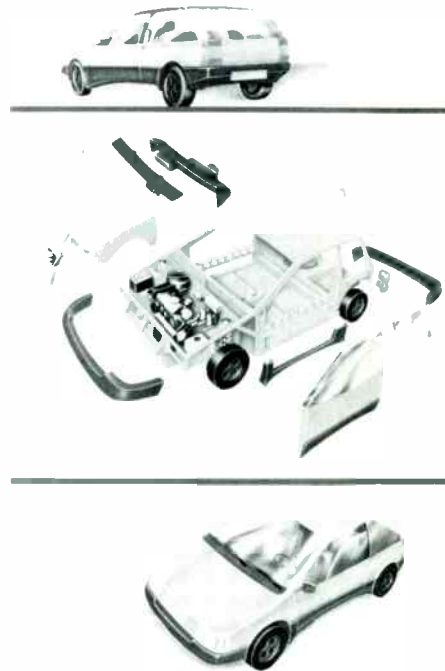
**General Electric's success** in helping carmakers meet their objectives on the auto assembly line is, ironically, measured in how many pounds the Company can *add* to the new models, Group Executive Carson notes. For example, each of the 1980 Ford Thunderbirds uses more than 20 pounds of GE plastics—including wheel covers, ignition systems and distributor caps.

"Presently, the biggest and most exciting opportunity for us is instrument panels," Carson says. "Plastics fit better in instrument panels than any other place on the car. We expect this core business to double by 1982."

He also speaks of promising opportunities with GE printed-circuit laminates, as auto

makers change over to solid-state microelectronics to oversee such vital engine functions as ignition-timing and emission controls.

"Cars have gone on a strict diet," Carson concludes. "They're on a high-protein diet of top-performance technology designed to accomplish weight loss, while assuring safety and environmental protection. Engineered Materials Group, with its wide array of chemical, plastics and metallurgical-based businesses, has the resources to serve the automotive industry, and we intend to stay strongly positioned for further penetration of opportunities worldwide." ▲



A mid-1980s GE look at automotive possibilities conjures up this car, designed with weight and fuel savings in mind. The main structure is metal-pressed, with injection-molded plastics increasingly used for the exterior body parts. Although futuristic in concept, it could be built with today's technology.

## Honor to your partner

Six million people, including many from GE, delight in square dancing.

**Y**ou can see them on any Saturday night of the year. In barns and in gymnasiums, in cafeterias with tables pushed against the walls and in specially-built dance halls. Women in swirling gingham skirts and men in smart string ties. Square dancers—six million of them across the country. And if you look closely enough, you'll see General Electric people, hands reaching out for an allemande left.

"Square dancing is a labor of love," says Lynn's Norman J. Poisson, one of many from GE who have found it to be a relaxing, family activity.

The cost attainment manager for Aircraft Engine Business Group's F404 engine is one of the top square-dance callers in the world, and that's saying a lot when you realize there are 9,000 of them. This year, for example, he's calling at the National Square Dance Convention in Memphis, Tenn., in California three times, Texas twice and once in Florida.

Drawn into square dancing because he "wasn't into ballroom dancing," Poisson likes the choreography of the Western square, where precision maneuvers such as a grand right and left and a dos-à-dos are the norm and dancers have "computer minds." He has written his own choreography and currently two of his maneuvers—*change-o* and *hokus-pokus*—are in



Square-dance caller Norman J. Poisson emcees a "hoedown."

the top ten "Pulse Poll" published by *American Square Dance* magazine.

Poisson, who recently cut his first square-dance record, operates a tape subscription service with his wife, Jackie. They send the most advanced calls—known officially in Western square dance lingo as Challenge 1 and 2—to aficionados in 40 states and overseas.

"There are few people who do the Challenge stuff," points out Poisson, who has successfully separated his calling career from his work at GE. "Consequently we're more and more in demand."

Round dancing, where couples whirl in a circle, is the forte of James E. Barnes, applications

(continued next page)

and service engineer for the San Jose Motor Department. He's been calling for seven years.

"It improves your square dancing," he says about round dancing. "Anybody who loves music will love round dancing. All the dances are choreographed to modern-day musical trends, including disco." He adds: "It's very difficult to dance and listen to music and still have troubles on your mind."

Another San Jose caller is Donald E. Lewis, a senior technician for Nuclear Energy Business Group. Calling two nights a week and dancing one, Lewis still finds the time to teach two classes.

"Teaching gives me a great deal of satisfaction," he says. "It takes a year for people to learn Western basics. I start them off dancing in a big circle before breaking them down into squares. After the first lesson, they have mastered several steps, including the shuffle."

Beginners have 38 basic movements they need to know before reaching the intermediate level. All in all, Western square dancing has well over 3,000 precision movements.

Without dancers, of course, callers couldn't exist. And GE has its share of dancers, too.

Robert and Lorraine Janack of Schenectady began dancing in 1975. "Ever since my husband dragged me into it," laughs Mrs. Janack, an executive secretary for Large Motor and Generator Department. "It's a family thing," adds Mr. Janack, energy coordinator for Large Steam Turbine-Generator Division. "You always have a good time, and square dancing teaches you 'down home' manners."

The Janacks dance at Ponderosa Hall, built for square dancing by a distributor of GE products. It has a free-floating maplewood floor, built-in sound system, a television room for children and a kitchen for refreshments.

Promenading to Milwaukee, we find John R. McKinnon, a financial manager for Medical



John and Jessie McKinnon

Systems Business Division, who has been square dancing since his days in the 4-H Club. He grew up on a ranch in Colorado and met Jessie, his wife, on his way to a dance. For him, it has served as an icebreaker in meeting new friends.

"Because of the nature of my job," explains McKinnon, who is chairman of the Milwaukee Area Callers Association, "we move frequently. Square dancing has provided us with an easy way to move into a new community, because dancers are traditionally friendly people."

Echoing McKinnon's sentiments is Cleveland's Jerry R. Beverly, supervisor of employee activities and recreation at Nela Park and


Robert and Lorraine Janack



Donald E. Lewis (l) discusses new square-dance step with James E. Barnes.

Nela Camp. "By the time you leave a square dance, you end up knowing more people than you can remember."

Both a dancer and a caller, Beverly has been calling at the Cleveland Veterans' Hospital for the past five years.

"I thought I was just there to put on a demonstration," he reminisces about his first visit to the hospital. "But when I sang out 'let's square 'em up,' there were three sets ready to dance—all in wheelchairs." Beverly and the handicapped veterans worked out the dancing logistics, and what seemed a dancing impossibility became an annual event. 



Square-dance caller Jerry R. Beverly

## Organization Changes

### CONSUMER PRODUCTS AND SERVICES SECTOR

**Henry J. Singer**, General Manager—  
Lamp Products Division

**W. Nat Watson**, President and General  
Manager—Puritan Insurance Company

**Donald L. Awbrey**, General Manager—  
Home Laundry Product Management  
Department

**Edward S. Joseph**, General Manager—  
Range Engineering Department

**James M. Warren**, General Manager—  
Refrigerator Product Management  
Department

### INDUSTRIAL PRODUCTS AND COMPONENTS SECTOR

**Donald B. Dickerman, Jr.**, General  
Manager—Electronic Components Sales  
Department

**David M. Engelman**, General Manager—  
Distribution Equipment Division Marketing  
Department

**William R. Fenoglio**, General Manager—  
General Purpose Motor Department

**Gerald L. Gaspary**, General Manager—  
Central Apparatus Service Department

**Jack M. Kirker**, General Manager—Trans-  
portation Equipment Products Department

**Joel Tenzer**, General Manager—Drive  
Systems Department

### POWER SYSTEMS SECTOR

**Charles C. Thomas**, VP—Special Projects  
**Robert T. Bruce**, General Manager—Instal-  
lation and Service Engineering Business  
Division

**Harold B. Finger**, Staff Executive—Power  
Systems Strategic Planning and Develop-  
ment Operation

**Randall J. Alkema**, General Manager—  
Power Transformer Department

**Frederick J. Ellert**, General Manager—  
Electric Utility Systems Engineering  
Department

**John R. Patterson**, General Manager—Gas  
Turbine Marketing Department

### TECHNICAL SYSTEMS AND MATERIALS SECTOR

**Gregory J. Liemandt**, General Manager—  
Information Services Business Division

**Jack O. Peiffer**, Staff Executive—Technical  
Systems and Materials Finance Operation

**Finn O. Meiland**, VP and General Manager  
—General Electric Information Services

European Marketing and Service Department  
**Bobby J. Tharpe**, General Manager—

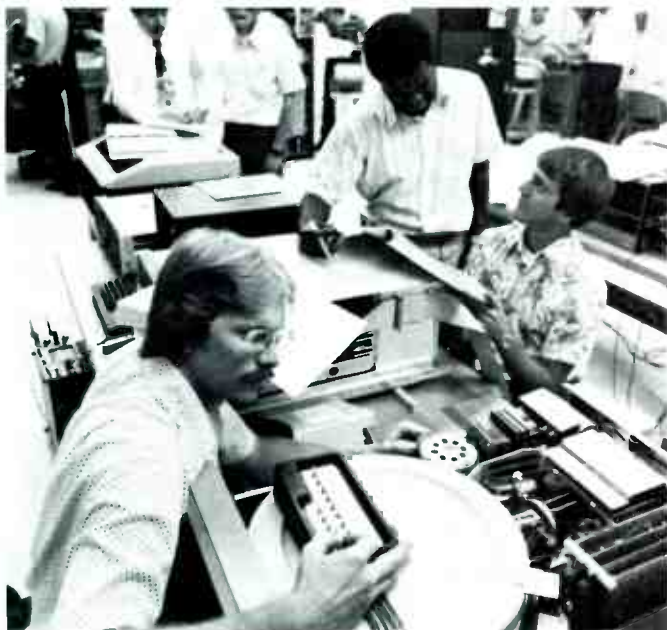
Advanced Energy Programs Department  
**Joseph G. Wirth**, General Manager—Plastics

Technology Department

**Robert L. Hatch**, General Manager—  
Engineered Materials Georgia Project Dept.

# WANTED:

3,000 field engineers with moxie;  
hungry for challenge; 'have skills, will travel'  
(even to Timbuktu, if necessary)



At I&SE center for field engineering development (left) in Niskayuna, N.Y., employees receive 'hands-on' technical training on all types of GE equipment. Below: field engineer Kay Nordstrom checks I&SE work at water treatment facility of Long Island electric power plant with foreman John Callahan.



What General Electric component recruited the greatest number of engineers off college campuses last year? For a Company that includes such high-technology operations as jet engines and information services, the answer may be surprising. It's Installation and Service Engineering Business Division (I&SE).

The I&SE college recruiting team, comprising 120 field managers, represents the largest such division effort in the Company. "Last year, I&SE interviewers visited nearly all major U.S. engineering institutions, and 290 graduates were hired," says GE's Charles C. "Tip" Thomas, who on March 1 was named Vice President of Special Projects for Power Systems Sector, pending his retirement later this year.

As VP and general manager of I&SE, he has been responsible for developing the people resources critical to the success of this Schenectady-based field engineering organization.

"The most critical issue facing I&SE in the 1980s is our ability to recruit, train, retain and reward our technically skilled people," Thomas states. "People are to I&SE what computers and machine tools are to most businesses. Their knowledge, skills and experience shape I&SE's products—the services we sell. It seems almost a cliché, but it bears repeating: 'People are our most important asset.'

"Despite the '70s downturn in U.S. capital-equipment orders and the resultant falloff in installation business, I&SE continues to thrive—by offering a wide range of diagnostic, management and field engineering services to meet the increased demand for maintenance and modernization of equipment," Thomas notes. "With some 170 field service

locations worldwide, we offer on-site support services for mechanical and nuclear, as well as electrical and electronic, equipment and systems.”

He continues: “The key ingredient in our ability to respond to customer demands is our field engineering personnel—problem-solvers who know how to trouble-shoot systems, interpret results, and recommend and implement service programs. In the past ten years, I&SE sales have grown 500%, and our forecast commits us to grow sales at a 15% annual rate through the ’80s. To achieve such growth, we must add another 3,000 engineers by 1985.”

**Programs specifically aimed at meeting I&SE’s ambitious human-resource goals are aggressively underway.** Thomas observes that “we re-interview likely candidates at our field offices, where we take them to actual job sites. We try to give candidates an up-close view of field engineering. It’s not for everyone.”

He elaborates: “Our people can be found at work in the humid jungles of Indonesia and Guatemala; on North Sea oil rigs in 50-mph icy gales; aboard ships for weeks at a stretch; as well as at the usual plant locations worldwide. Unusual work schedules, dirty and noisy environments, travel, months away from home, daily contact with tense customers who have major equipment down—all are part of the field engineer’s job.”

Recruiting the right *type* of individual for I&SE’s work requires a careful screening process, Thomas remarks. “We want engineers who are eager for practical challenge, who like responsibility, and who enjoy mustering the resources of a company the size of GE in

solving a customer’s problem. We train our interviewers to spot these self-starters.”

The largest single investment of I&SE in its business is in training. Its Field Engineering Program, begun in 1966, has undergone continual upgrading. In Niskayuna, N.Y., its development center is currently being expanded, with a 23,000-sq.-ft. addition of new laboratories and classrooms.

Thomas explains the need for postgraduate engineering training: “Universities tend to stress the theoretical over the practical, and our program bridges the gap by ‘giving life to theory.’ The program consists of a 12-to-18-week, college-accredited course that includes lab assignments. It is followed by advanced training or work with product departments and, finally, by a field training period before the new hire makes a significant contribution. In total, this takes about a year.”

Since the program began, some 2,600 I&SE program graduates have gone on to their first assignments.

“We’re now planning to expand and change several aspects of the training to provide a more enriching experience,” Thomas says. “The program soon will be lengthened to two years. Each student will get the formal course work, plus more structured field and specialized training assignments.”

He continues: “We’ve also stepped up advanced training efforts to keep our experienced people up-to-date. In 1979, more than 2,500 engineers received some type of advanced technical or managerial training.”

In San Jose, with Nuclear Energy Business Group, I&SE currently is building a boiling water reactor training facility to develop nuclear field engineers for the expanding nuclear services market.

**Emphasis on motivation of I&SE employees** has led not only to incentives such as managerial awards and recognition programs, but to unconventional ones, too. “Our new ‘site manager compensation plan’ provides extra compensation upon successfully completing major jobs where added duties are undertaken,” Thomas says. “With our ‘deferred overtime plan,’ a field engineer can either collect overtime pay or take extra time off.”

To monitor the pulse of employee attitudes, surveys are continually conducted in I&SE’s various offices. Because its people are so dispersed, special emphasis is placed on employee meetings where, besides business topics, personal issues are sounded as well.

“The international area presents I&SE with additional human challenges,” declares Thomas. “A ‘quality-of-work-life’ task force has been working on ways to improve job conditions for field engineers assigned offshore. Several recommendations have already led to notable improvements.”

He points out that, as part of the Division’s hiring in the 1980s, “it’s our goal to obtain increasing numbers of foreign nationals. I&SE’s international business represents a growing part of its revenues. We need individuals who can provide us an ‘extra ingredient’—a close identity with a certain country or region which can add to our ability to service customers.”

Thomas concludes, “Recruiting, training and motivating people is the most important activity I&SE can do. In the ’80s, our success will depend largely on our having energetic, technically competent employees who can become effective representatives for the Company.” ■

# Modernizing the world's aircraft

GE engines are playing a major role in helping airlines and the military upgrade and supplement their fleets.

Certain sectors of the national economy may be predicting a temporary slowdown, but in the aircraft engine business, the vital signs are healthy. Last year, General Electric enjoyed its biggest year yet in terms of new commercial aircraft engine orders and sales. Another encouraging sign is that cost-conscious airline executives are exploring ways to re-engine their older planes. CFM International, a company jointly owned by GE and France's SNECMA, has positioned itself to earn much of this re-engining market as well as new military applications.

At Aircraft Engine Business Group headquarters in Evendale, Ohio, Brian H. Rowe, Senior VP and group executive, cites an impressive statistic: "Fifty-three percent of this Group's sales come from off-

shore—the highest percentage of offshore sales of any General Electric Group. We're the Company's largest international Group."

He continues: "Our CF6 and business jet engines now operate in 74 countries. We ended 1979 with 65 CF6 operators or sold customers—with ten of these being 1979 new sales. The GE/SNECMA CFM56 also had a banner year, with six airlines deciding to re-engine their Douglas DC-8 aircraft with CFM56s."

**Commercial accomplishments** by Aircraft Engine the past year have furnished a solid foundation for continued growth, observes James E. Worsham, VP and general manager of Commercial Engine Operations.

"We brought the first CF6-80 engine to test ahead of sched-

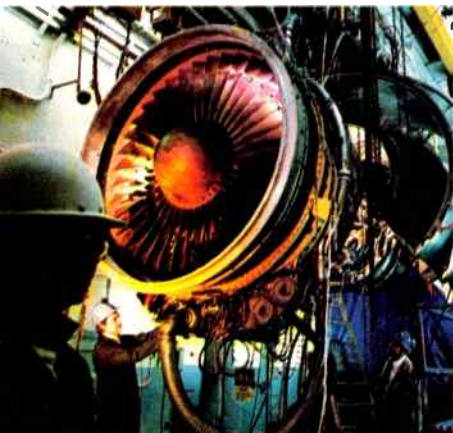
ule, and already have orders for more than 120 Airbus Industrie A310s and Boeing 767s," Worsham states. "We've also made inroads with the CF6 for Boeing 747s, and Airbus sales of CF6-powered A300s grew significantly in 1979."

He continues: "In total, the CF6 was selected for 55 percent of the high bypass engine aircraft ordered last year."

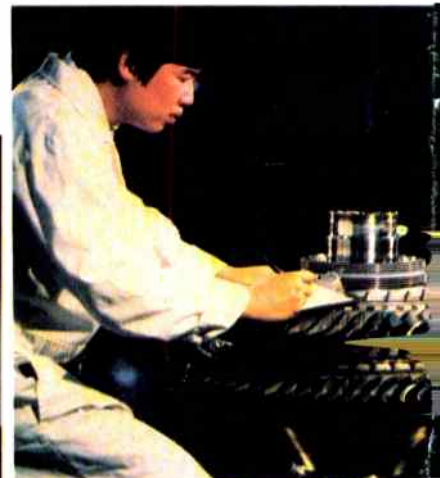
As for the CFM56 turbofan engine, 1979 saw its simultaneous certification in Europe and the U.S., and the first sales of this powerplant to airline customers seeking to re-engine 64 DC-8 aircraft, Worsham notes. In November, the first CFM56-powered Boeing 707 was test-flown. The quiet, advanced-technology CFM56 engine saves fuel and meets certain noise standards required by 1985.

"Instead of retiring or sell-

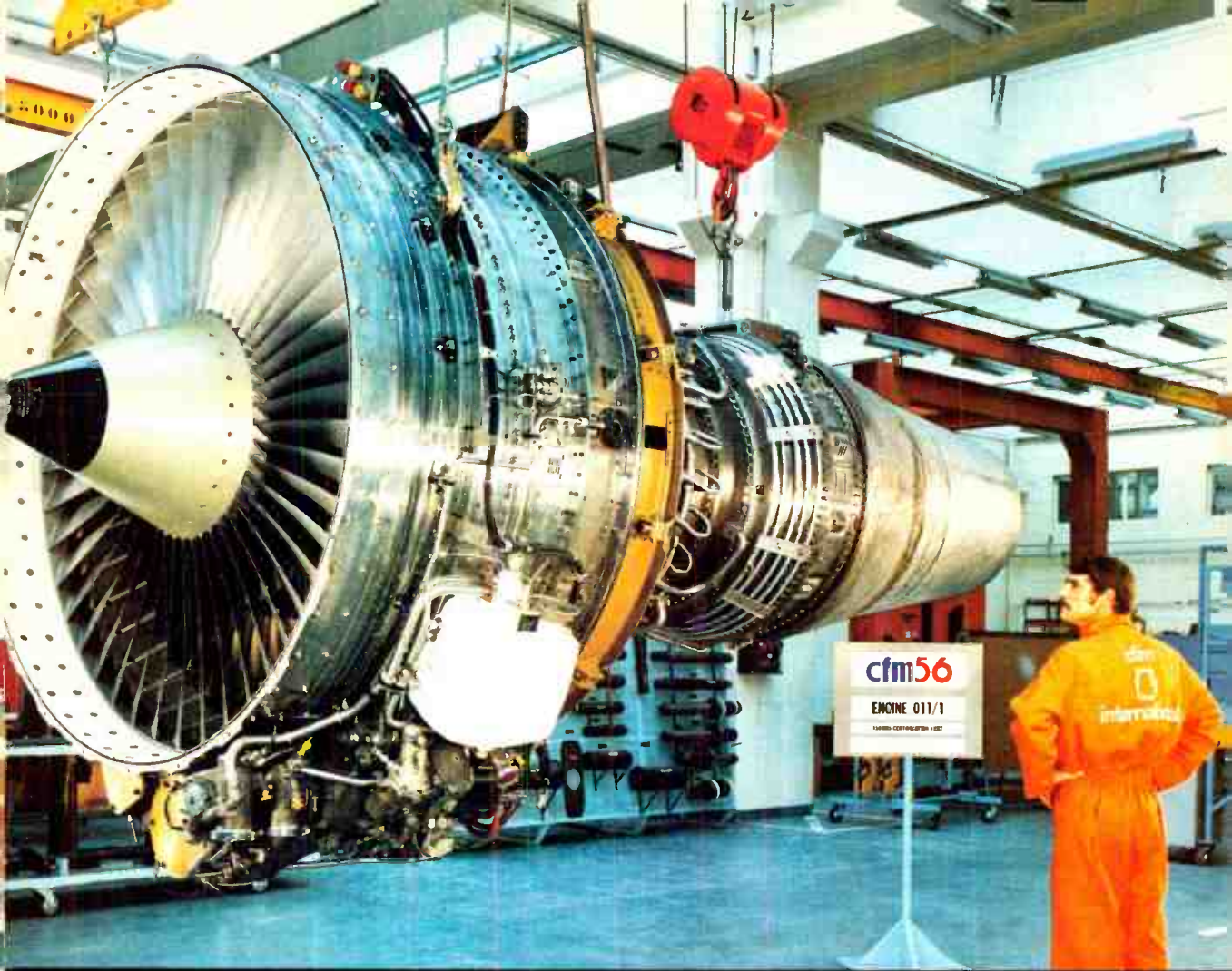
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In Evendale, Ohio, a CF6-80 engine (l) is checked out in test cell, and turbine-blade research (below) is conducted with laser. Right: an engine overhaul in Ontario, Calif.







The first orders for the GE/SNECMA CFM56 jet engine have now been received. Targeted for new and re-engined aircraft in the short-to-medium-range class, the CFM56 is marketed through CFM International, a joint company. In 1979, the first CFM56-powered Boeing 707 was test-flown.

An F/A-18 Hornet fighter with GE's F404 jet engine sits on Navy carrier (below). At Strother Field, Kan., GE technicians service CJ610 engine on a Learjet. GE plans to expand the Strother operation later this year.





On the tarmac in Toulouse, France, an Airbus Industrie A300 jetliner with CF6 engines is prepared for a test flight. In the U.S., Eastern Airlines has 12 GE-equipped A300s in service.

ing off their older fleets, airlines can use CFM56s to re-engine their airplanes with new, quieter, more fuel-efficient engines at one-half to one-third the cost of new planes," he says.

"Another attraction of the CFM56 is that it offers more thrust, so an airplane can use shorter fields and cruise at higher altitudes," Worsham remarks.

Prospects in general aviation were enhanced in 1979 when General Electric's CF34 business jet engine was specified for a new twin-engine bizjet, Canadair Ltd.'s Challenger E, and when Bell Helicopter announced the go-ahead for its 214ST civil helicopter with GE CT7-2 turboshaft engines.

Worsham notes that "the CF34 is the first high bypass turbofan engine offered by GE to the general aviation industry, and it is being studied by other aircraft manufacturers for future business and commuter aircraft. The Challenger E—a stretched version of the Challenger Executive aircraft—will offer an operating range beyond 4,000 miles."

Referring to engines for commuter aircraft and helicopters, Worsham observes: "The world's transportation needs are changing rapidly. Trunk and regional carriers are withdrawing from the smaller com-

munities, and this vacuum must be filled by commuter aircraft that provide links to the larger cities. Right now, there is a gap in airplane availability, especially in the 30-to-40-passenger aircraft."

To support this market, GE is offering a turboprop version of its CT7 turboshaft engine. The CT7 is derived from the T700 engine, already in production for the Army's Black Hawk helicopter—and in development for the Army's AAH (Advanced Attack Helicopter) and the Navy LAMPS (Light Airborne Multi-purpose System) helicopter. He notes: "This outstanding, tough military helicopter engine thus is being offered in two commercial versions—both as the CT7-2 turboshaft for helicopters and as the CT7-3 turboprop on fixed-wing aircraft."

Meeting defense needs, Aircraft Engine continues to be a major supplier of military engines. "Most Group engine sales a decade ago were military, and our defense business continues to do well," states James N. Krebs, VP and general manager of Military Engine Operations.

Krebs says: "GE's F404 jet engine for the Navy's newest fighter aircraft, the F/A-18 Hornet, is now in production. Congress recently approved plans for McDonnell Douglas to build a fleet of 800 F404-powered F/A-18 Hornets, to be completed by the mid-'80s.

"Also," he continues, "the Company has been selected to develop and flight-test an F101 DFE (Derivative Fighter Engine) as a possible engine alternative for such aircraft as the Navy F-14 and Air Force F-16. This work, if it leads to new orders, would launch us solidly back into the large-fighter-engine field."

In January, the Air Force announced it would re-engine a KC-135 tanker with CFM56 engines, Krebs observes. "The KC-135 is a military version of the 707 transport, and the program could lead to numerous orders—as many as 500 engines."

Krebs points out that many GE military engines have been powering aircraft worldwide for 25 to 30 years—"and they are still being produced, and will be for some time to come."

Looking to the future, he states: "Our new military engines, the F404, T700 and TF34, have a production schedule that runs into the 1990s."

A complete spectrum of powerplants is offered by GE today, providing leading-edge technology in such areas as superalloys, turbine heat transfer, advanced composites, acoustics control and combustion, sums up Group Executive Rowe. "In this time when airlines are experiencing spiraling fuel costs and a tapering off in the number of passengers, competition is particularly keen; but with our stable of quiet, fuel-efficient engines, we are confident we can win a major segment of airlines' re-engineing programs as well as other new business."

A new method of producing superalloys, powdered metallurgy, has proven to be a major productivity gain for the Group, mentions Raymond F. Letts, VP and general manager of Aircraft Engine Manufacturing Division. "To obtain engine parts, we must use expensive materials—and prices have been going haywire. By producing superalloys in powdered form and then, under high pressure, shaping and machining them, we can save *hundreds of thousands of pounds of materials* a year—

and eventually, *hundreds of millions of dollars.*"

Another example of innovation is at GE's Peebles Testing Operation near Evendale, Ohio, where engineers are using high-energy x-ray radiography in the development of several new turbofan engines. States Frank E. Pickering, general manager, Engineering Division: "Aircraft Engine is employing the very latest technology to help measure changes within engine components as they generate up to 55,000 pounds of thrust. Using high-energy x-rays to provide 'inside views' of engine blades and other parts, we are continually upgrading the engines to make them more reliable and efficient, safer and quieter."

Pickering goes on to say


that "we are developing more advanced technology in materials, processes and systems throughout our business. We're making significant strides in fuel efficiency, thrust-to-weight ratios, reductions in engine noise and emissions, and savings in engine life-time costs."

**Assessing Aircraft Engine's** prospects for 1980 and beyond, Rowe says: "If we obtain the orders we hope to receive, we would expect to *double* our current engine production rate over the next five years."

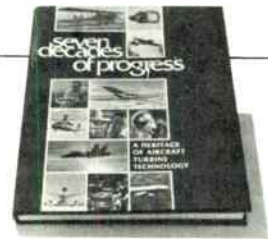
He observes that "marine and industrial markets for our aircraft-derived engines were very strong in 1979. The sea-going LM2500 has now been chosen for more than 130 ships in 11 world navies, and we are now

the world leader in delivered marine gas-turbine horsepower."

Product support accounts for more than one-quarter of our sales, he continues. "We have made tremendous strides in aviation service and component repair. This spring, ground-breaking ceremonies are being held in Singapore for a new subsidiary, GE/Aviation Service Operation, PTE, Ltd. There are ten major engine repair facilities, worldwide, capable of overhauling the CF6 and making repairs."

He concludes: "GE has some 38 years of aircraft turbine experience under its belt, during which time it has produced more than 84,500 jet engines. For our engine businesses, that's an unmatched record upon which to build." 

## Just off the press— new Aircraft Engine book



On Oct. 2, 1942, a small, glider-like aircraft, the Bell XP-59—equipped with two GE I-A engines—made a secret and highly successful test flight of ten minutes above a dry lake bed in California... America had entered the Jet Age.

Aircraft Engine Business Group's new 232-page, four-color book, *Seven Decades of Progress*, records this momentous event, and others, as it pays tribute to GE's heritage in aircraft turbine technology. The book, created by a team of individuals, uses hundreds of photos and extensive documentation in recording the Company's contributions to aviation advancement.


In a 1975 memo, Gerhard Neumann, then VP and group executive of AEBG, directed: "I want work to start at once on the history of the Aircraft Engine Business Group, from Day 1 until now. I would like you to consider a year-by-year event series of whatever was of prime importance."

William R. Travers, who had been involved

in the engineering and marketing of GE aircraft engines for nearly 40 years, undertook the research, organization and interviewing. Results of Travers' 1976 research led to the establishment of an archive in conjunction with Evendale's GE Jet Engine Museum.

Fred O. MacFee, Jr., when he became AEBG's VP and group executive in 1978, authorized the writing and publication of the book, "to serve as documentation of the past and provide guidelines for the future."

During the next two years, work was directed toward organizing, refining and supplementing the original data leading to this published documentation of GE's illustrious aviation heritage.

The book is being made available from Aero Publishers, 329 West Aviation Road, Fallbrook, Calif. 92028. It is currently for sale in book stores at \$24.95, but throughout 1980, GE employees may purchase it at half price, \$12.50, by writing the publisher. A \$2 postage and handling fee is required. 

# Those magnificent GE men and their flying machines



July 1962: Kneeling on the Edwards Air Force Base tarmac are GE test pilots John Fritz (l) and Richard Scoles.

**E**dwards Air Force Base sits smack in the middle of the Mojave Desert—300 square miles of baked landscape, brown and barren, known for its dry lake beds and, during the 1950s and '60s, its spunky test pilots, including a knot of men who ruled the pale blue sky above in jets powered by General Electric engines.

Dating back to 1952, 10 of those men have been GE employees. They came to Edwards to test Company engines. They flew through the sound barrier when it was still a frontier. They soared to the

fringes of outer space. They flew more kinds of jets than their counterparts in the U.S. Air Force. And, streaking through the skies at more than 1,300 miles per hour, they flew with one objective in mind: test the engine to its maximum performance.

At “Contractors’ Row” on Edwards’ northside, on the first floor of a hangar, is the office of Russell C. Larson, manager of flight operations and, today, GE’s only active test pilot. He joined the Company when it had a flight

test center at Schenectady County Airport, and was called to Edwards in 1963 to replace Eliot See, Jr., who had been selected America’s first civilian astronaut.

“It’s exciting work,” says Larson, who has spent 5,000 hours in the air for General Electric, testing such engines as the CF6 turbofan, the J79 and the TF34. “Whatever the project—a new jet engine, maybe—you know as a test pilot you’re going to make some kind of contribution.”

Adds Charles R. Anderson, the Company’s chief test pilot, who accompanies commercial airline pilots on their maiden flights in airplanes with GE engines, and who is former president of the International Society of Experimental Test Pilots: “It may sound glamorous and exciting, but it’s hard, nuts-and-bolts work.”

Anderson flew the entire flight test program for the TF39, the world’s first high bypass engine.

GE’s first chief test pilot was Roy E. Pryor, today a program general manager in Cincinnati for Aircraft Engine Business

Sept. 1952: Roy Pryor, GE’s first chief test pilot at Edwards, gets set for a trial run over the Mojave Desert in an F86.



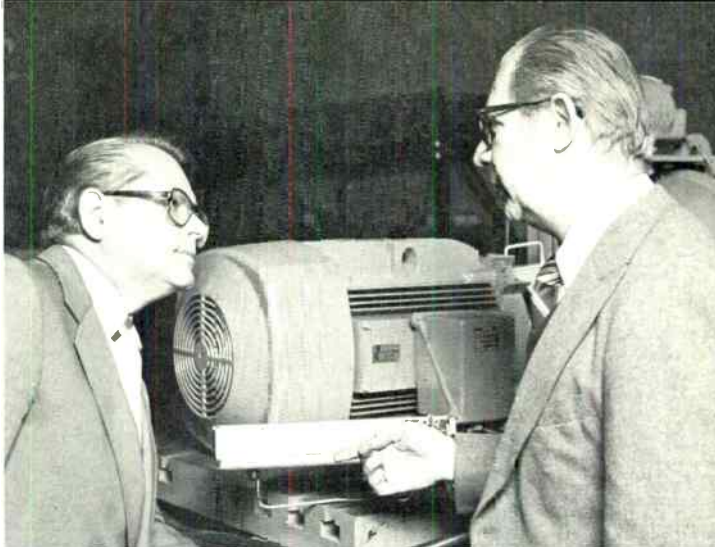
Group. After GE expanded its Edwards test center, Pryor tested the J79.

Other pilots were: Ontario's William A. Todd, marketing manager for Aviation Service Department, a veteran of aerial combat in Korea; Cincinnati's Richard J. Scoles, pilot interface manager, who, with the late Lauren W. "Swede" Davis, set a new transcontinental speed record with two CJ805s and succeeded Pryor as GE's second chief test pilot; Seattle's John M. Fritz, district manager for Aircraft Engine Field Programs Operation, who made two F104 deadstick landings exactly a year apart; Larson; and Anderson.

Says Scoles, who once reached 90,000 feet in a Starfighter: "We believed we helped make the J79 the best jet engine ever produced."

Fritz, the son of a test pilot, Air Force general and airline executive, observes: "GE had a most remarkable and unequaled record at Edwards. We felt very fortunate to be Company test pilots because we got to fly so many different planes. There wasn't room for hunches or superstition. You were right back at it the next day. You had to believe you and your team could handle any problem that came up."

Today, Larson, his office walls covered with aeronautical maps and charts, is awaiting orders to test new GE engines. He is anxious to be back in the sky, continuing the record of excellence started in the early '50s by Roy Pryor and William Todd. ▲



Small AC Motor's Dave Montgomery (l) and senior engineer Walt Martiny discuss new energy-saving motor.

## Energy-saving motors: their popularity surges

A new star energy saver began chalking up impressive sales gains in 1979: the GE energy-saving motor.

Presently, 64% of the nation's electric power is used to operate motor-driven equipment. Boosting efficiency with higher-efficiency motors produces big savings in energy and money.

GE customers are getting the message.

Typical of these is Consolidated Papers, Inc., of Wisconsin Rapids, Wis., which installed 80 severe-duty GE Energy Saver motors in its recent expansion program.

"Because motors use more electricity than any other equipment in our mills, we wanted to utilize wherever possible the new General Electric energy-efficient motors," says Kenneth K. Knapp, Consolidated's energy manager. "After we install these motors, we know we'll easily meet our return on investment, because the savings will offset the higher initial cost of the Energy Saver designs within two years—and then continue to give us electric power savings year after year."

According to David C. Montgomery, program manager—High Efficiency Products for the Company's Small AC Motor Department in Hendersonville, Tenn., sales of Energy Saver motors last year were three times higher than 1978. "And our orders so far this year are running well ahead of that pace," he reports.

The upturn in sales follows a period of education by GE motormakers that began in 1975 after the Specialty Motor Department introduced the first GE Energy Saver designs. (Larger motors of over 250 horsepower were already highly efficient—above 93% for those of the Large Motor and Generator Department.)

Sales began building as users learned that the high-efficiency motor, while costing more, actually saved the consumers money over time. ▲

## Protecting... The initials of a friend

Celebrating its 80th birthday,  
the GE monogram is the  
Company's most treasured asset.

Woe to those  
tampering with it!



You will find these letters on many tools by which electricity works. They are on great generators used by electric light and power companies; and on lamps that light millions of homes.

They are on big motors that pull railway trains; and on tiny motors that make hard housework easy.

By such tools electricity dispels the dark and lifts heavy burdens from human shoulders. Hence the letters G-E are more than a trademark. They are an emblem of service—the initials of a friend.

**GENERAL ELECTRIC**

This classic GE ad was first run in 1923, displaying the well-known GE logo which is still used as part of the official Company signature.

**W**ould you leave a new Rolls Royce unlocked in a public area with the keys in the ignition? Or carelessly fling a new mink coat on an unattended coat rack? Of course not. We all have the common sense to care for and protect most valued possessions.

General Electric feels this way about its corporate trademarks. Now 80 years "young," the GE monogram continues to be one of the world's best-known corporate emblems—and certainly is one of GE's most treasured possessions. First employed in Company advertising in 1899, the monogram has seen its use expanded as the Company's product line grew. The name General Electric was added to the monogram in 1925, becoming the registered corporate signature in 1934.

To help protect GE's highly valued marks, Company Trademark Policy 3.2 and the Corporate Trademark Manual contain appropriate guidelines for their correct use.

Fairfield's Douglas S. Moore, VP—Corporate Public Relations Operation, is responsible for monitoring trademark use and product branding. Moore states: "Despite the safeguards of a Company policy and the manual guidelines, there always will be both external and internal areas of incorrect usage that require our attention. The value and impact of our trademark can be maintained and strengthened only by using it correctly and uniformly."

External encroachment on GE's marks by infringers both in the U.S. and overseas is monitored and acted on by Paul Hoffmann, Trademark Counsel in the Corporate Patent Operation. No one outside the Company may use the trademark unless authorized or licensed to do so. Hoffmann emphasizes that "correct use is the beginning and end of the value of our trademark. If we hadn't used it with consistency for the past 80 years, we wouldn't

even *have* a trademark now—it would be virtually unrecognized by the public.” He adds, “Our trademark stands for good quality and therefore sells the product for us.”

Hoffmann recalls a particularly striking example where the GE monogram was appropriated by someone else. A New York dealer attempted to sell auto lamps imported from Taiwan at a bargain price, by underhandedly designing the outer package with markings and colors exactly like those of a line of General Electric lamps. The only differentiation was that his package had a distorted GE-like monogram. As a result of immediate legal action, a court injunction forced the distributor to repackage his entire lot into cartons approved by GE.

The Company also must deal with other companies that try to use the “GE” initials in their corporate identification. This can mislead the public into believing that they are affiliated with General Electric. Probably the most significant trademark case for the Company involved an unaffiliated firm, The General Electric Company of England, over name and trademark confusion. After a favorable decision in The House of Lords, a settlement was reached increasing GE’s rights to the name General Electric worldwide.

“We avoid the risk and expense of a lawsuit whenever we can,” says Hoffmann. “When a trademark problem exists, we generally write to the company and ask them to stop the violation. We’ve been reasonably successful.”

To correct internal deviations and improper uses of the monogram, James G. Rebeta, manager-Corporate Exhibits, Corporate Public Relations Operation, has been appointed “policeman of the trademark.” Rebeta stresses: “An important rule regarding trademark use is that it should stand prominent, ‘free and clear,’ unencumbered by secondary identification, not embellished in any way.”

Concerns that continually warrant atten-

tion range from abuse and misuse of the corporate signature to incorrect letterheads that result from a component’s search for individuality, and even to occasional misbranding of a GE product. Examples of internal misuse arise frequently in graphic visuals intended to enliven speeches at conferences—one speaker recently used the trademark wrapped and locked in chains!

Rebeta may be only half-joking in his advice to “equip every conference chairman with a pre-packaged diesel air horn—to be activated whenever a trademark violation appears in a presentation. For a second offense, the speaker goes into the pool. Immediately! No exceptions!”

He continues: “It’s ironical that—even though GE top management stresses a ‘One-Company’ image, and 90 percent of people polled recognize the GE monogram immediately—there continues to be interest in changing the Company insignia. Suggestions pour in for the redesign of the monogram.

“Unfortunately,” Rebeta remarks, “an average person looking at many modernized trademarks for even well-known companies would be hard pressed to identify them correctly. I, for one, feel that changing our trademark would seriously diminish the tremendous recognition that it has developed over many years.”

He notes in passing that “some GE components have spent considerable time and money on the development and promotion of individual organizational logos. Generally they only detract from a ‘One-Company’ image.”

At a 1978 security analysts’ meeting, GE Chairman Reginald H. Jones provided a quick response when asked if GE’s second century was an appropriate time to modernize the corporate logo. His reply: “I thought this was one of the best-known and most-respected symbols in the world, and I kind of go along with the axiom: ‘If it ain’t broke, don’t fix it.’ So I question whether we *will* change it.”

### A few of the notorious examples of GE trademark misuse:



**COMPUTER SAILS.** Billowing with wind off the Florida coast, this handsome spinnaker was designed with the help of GE technology, eliminating the black magic of sail designing.



North Sails, Inc., of Pewaukee, Wis., with 18 manufacturing facilities in 11 countries, computer-designed this triradial spinnaker using data stored in a General Electric Information Services Company (GEISCO) supercenter (above). The GEISCO supercenters in Ohio, Maryland and Amsterdam are vast computing systems linked to North Sails and 5,000 other companies around the world through a 24-country International Teleprocessing Network.

Notes Milwaukee's John F. Sowka, GEISCO branch manager: "To get the best punch out of the wind, people at North Sails feed information into a terminal linked through the GEISCO network. Information in the supercenters is processed against North Sails' data files where numerous sail shapes are stored. The designer then asks the computer to calculate the 'perfect' sail to fit certain specifications."

