



GENERAL  ELECTRIC

Monogram

MARCH-APRIL 1981

Oceans of resources



PLUS:

**The microelectronics thrust
and GECC update**

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GENERAL ELECTRIC **Monogram**

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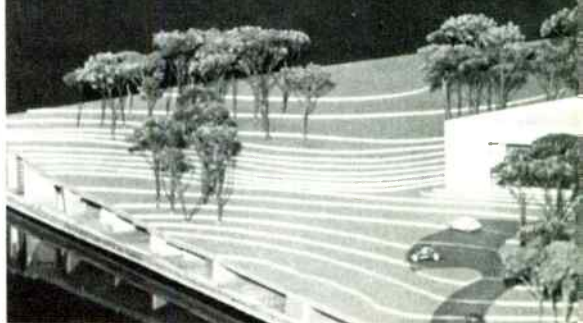
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THE COMPANY

Accelerating GE's microelectronics thrust

Major microelectronics center
in North Carolina
implements the Company's drive
to apply 'the new electronics.'



The intersection of Cornwallis Road and T. W. Alexander Drive in the rolling countryside of Durham County, N.C., is covered mostly by pines and hardwood trees. But soon it will become the address of one of the most modern microelectronics facilities in America.

It is the General Electric Microelectronics Center (MEC) that is now rising, and it symbolizes the exciting wave of microelectronics innovation that is sweeping across most businesses of the Company: a major expansion in electronics



GE VP Donald S. Beilman (right) shows model of new center to North Carolina Gov. James B. Hunt, Jr.

facilities at the R&D Center in Schenectady; a new lab in the Industrial Electronics Business Group; and the recently completed merger with Intersil, Inc., a manufacturer of advanced integrated circuits (see box, page 4).

Why the emphasis on microelectronics? Vice Chairman Edward E. Hood, Jr., explains:

“By the mid '80s, two-thirds of General Electric's sales will be impacted by the electronics content in our diversified product lines. We're undertaking these major new programs to

make sure that our products and systems fully incorporate microelectronics as a key to market leadership.”

Construction of the Microelectronics Center's first phase is now under way. It will consist of a combined laboratory-production facility, a technical support building, offices and a services area. The first shipment of custom integrated circuits (ICs) from the Center is expected in mid-1982. This one facility initially will manufacture as many as four million ICs annually.

(continued next page)

Initial employment will be about 160 high-technology professional and support employees. The Center may ultimately employ 500 over the next decade as additional microelectronics facilities, each constructed to incorporate the highest state-of-the-art at the time, are added to the first production area.

Over the next five years, the Company will spend more than \$100 million in just the first phase of the new Center, which will occupy a 90-acre site in a growing electronics-oriented area known as Research Triangle Park. The MEC's mission will be to conduct research, development and production of advanced custom integrated circuits to be used in GE products (see *Monogram*, January-February 1980). The Center will work with Corporate Research and Development in Schenectady to implement new process technology and with the Electronics Lab in Syracuse on software development. Training and education of product operation engineers

will also be a major Center activity.

Picking the site. Before selecting Research Triangle Park, General Electric investigated some 25 possible locations.

Observed Hood: "A key factor in the selection of North Carolina was its new Microelectronics Program with a state center in the Raleigh-Durham area. General Electric is tremendously impressed by Governor James B. Hunt's efforts in spearheading a drive to make North Carolina an eastern microelectronics technology center, and is pleased to be playing a significant role in that effort."

Another reason for the selection was the state's quality of life and favorable cost-of-living level — key factors in attracting microelectronics professionals from other parts of the country.

Research Triangle Park is about equidistant from three major universities: Duke at Durham, the University of North Carolina at Chapel Hill

Intersil: New GE business is in the "chips"



This artwork is used to make a printed circuit board at Intersil.

SILICON VALLEY is one of California's most famous spots, yet doesn't appear on maps. The integrated circuit was born there. It's home for some of the most innovative electronics firms, all clustered in a 20-square-mile-area between San Jose and San Francisco Bay.

Intersil, Inc., is one of those bustling young high-tech semiconductor firms and it made news earlier this year by merging with General Electric. Terms included payment by the Company of \$35 per share of Intersil stock, or about \$235 million.

GE and Intersil have "known

each other" professionally, since both have been on a team chosen by the Department of Defense under the VHSIC (Very High Speed Integrated Circuit) program to develop a new generation of high-speed, high-density CMOS integrated circuits. (Intersil is a leading developer of Complementary Metal Oxide Semiconductors that combine high performance with very small power needs.)

CMOS is one of several process technologies and advanced integrated circuit designs that have helped Intersil rank among the top semiconductor producers in the U.S.

The company has about 4,000 employees and more than 375,000 square feet of plant space in California and Massachusetts, plus overseas operations in Singapore and India. Intersil has integrated manufacturing capability in both digital and analog systems.

and North Carolina State at Raleigh. The 9,000-acre development is the largest planned research park in the nation.

GE Vice President Donald S. Beilman, general manager of Advanced Microelectronics Operations and head of the Technical Systems and Materials team that is creating the MEC, applauded the state's commitment to develop a comprehensive microelectronics program involving the area's leading universities and technical schools, adding that it "was a pivotal factor in our decision to locate here."

Heading the MEC. Appointed general manager of the Company's new Microelectronics Center is James E. Dykes, a veteran semiconductor manager and engineer who served as VP and general manager of the Harris Semiconductor Division before joining GE. Dykes reports that construction of the MEC is on schedule, with a December 1981 occupancy of production areas expected




James E. Dykes

and opening of offices by February 1982. Presently he and his staff are operating from temporary quarters in Research Triangle Park.

"Recruiting to fill our key slots is going well," reports Dykes, "and we're already working with scientific computers and computer-aided design systems that will eventually be installed in the Center." He adds that his goal is for a user-oriented facility that is "cost-competitive, at the leading edge of IC technology and that GE components find easy to use."

The new Microelectronics Center gives further impetus to the Company's push into the front ranks of electronics development. Other major steps are in motion to advance the Company's electronics capabilities:

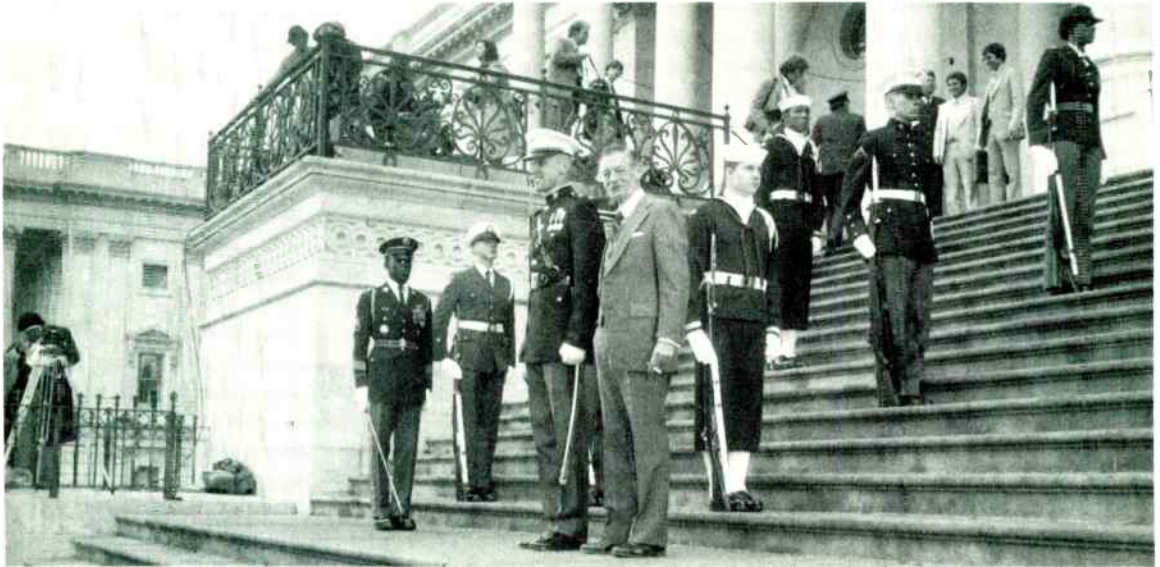
- GE completed a \$235 million merger by acquisition of Intersil, Inc., of Cupertino, Calif., a manufacturer of advanced-technology integrated circuits.
- A \$180 million across-the-Company Microelectronics Program (MEP) is under way, integrating the efforts of existing components, such as the Electronics Lab in Syracuse and the Aerospace Electronic Systems Department in Utica, among others, with the new MEC and Corporate Research and Development. The goal of the MEP is to carry General Electric into the ranks of the advanced microelectronics producers by 1985, and to provide product leadership through innovative product features.
- In Schenectady, a \$50 million expansion of the corporate Research & Development Center, which will include a modern electronics laboratory, is well under way. The new electronics lab will include facilities for research into electronic materials and semiconductor processing. Occupancy by mid-1982 is expected.
- At Charlottesville, Va., a \$31.3 million consolidation of Industrial Electronics Business Group facilities was announced by Senior VP and Group Executive Donald K. Grierson. A new Industrial Electronics Laboratory is part of the project, and its mission, says Grierson, will be to help accelerate GE's plans for the "Factory of the Future" in which modern industrial control concepts will be utilized to achieve highly productive, energy-efficient, automated systems. 

"Intersil grew sales an average of 20% a year during the late 1970s," says Orion L. Hoch, Intersil president. "Our objective is to keep the company steadily growing in earnings and its return on revenue before taxes moving into the 15-20% range."

Among the expanding markets for Intersil's many products: semiconductor memories for terminals, cash registers and general purpose computers; analog and digital circuits for auto controls and instruments; industrial process control systems; medical equipment; and custom circuits for telecommunications.

According to Executive Vice President James A. Baker, Sector Executive of the Industrial Products and Components Sector, Intersil will operate with its present management as a wholly owned subsidiary of GE and continue as a major supplier to the merchant semiconductor market.

Monographs



A Capitol coincidence. When now-retired Chairman Reg Jones attended Ronald Reagan's inauguration, he received a "special GE escort"

down the Capitol steps.

The escort: U.S. Marine Corps Captain Richard Natonski, whose father—Frank J. Natonski—has been a

GE employee for 31 years. The elder Natonski works as a flight technician at New York's Westchester County Airport.

Honors. Leonard Vickers, staff executive—Consumer Products and Services Marketing Operation and manager—Corporate Advertising and Exhibits, was named the nation's outstanding corporate advertising executive by readers of *The Gallagher Report*.

- Schenectady's Dr. James M. Lafferty, manager—Power Electronics Laboratory at the corporate Research and Development Center, was elected president of the International Union for Vacuum Science, Technique and Applications.
- Dr. Roland W. Schmitt, GE Vice President for Corporate Research and Development, and Dr. H. Austin Spang III, a control engineer at the R & D Center, were elected Fellows of the Institute of Electrical and Electronics Engineers—the highest

Thank you. Retired Chairman Reginald H. Jones recently received a letter of appreciation from the Family Liaison Action Group (FLAG, Inc.) that was established during the hostage crisis.

"On behalf of all the families of the Americans held hostage in Iran," wrote the group's president, Katherine E. Keough, "I would like to express our deep appreciation for the active role you have taken in raising funds [for our group]. Your efforts prompted an overwhelming outpouring of support from the entire business community. It is a reflection of industry's deep commitment to personal freedom.

"We are extremely grateful for this extraordinary personal and corporate contribution."

rank members can attain.

- The Company recently held a special inventor-recognition ceremony for three scientists at the R & D Center who hold a total of 100 patents: Dr. Jerome J. Tiemann (50 patents); Dr. Ivar Giaever (25); and Charles W. Eichelberger (25).

- The American Nuclear Society's Board of Directors presented its Exceptional Service Award to Dr. Paul Grebler, manager—Reliability and Safety Engineering for Advanced Reactor Systems Department at Sunnyvale, Calif.

Foreign assignment. Rimas A. Chesonis recently returned from Spain, where he served as one of 30 special American delegates to the 1980 Madrid Conference on Security and Cooperation in Europe.

Chesonis, who was on leave of absence from his position of region operations manager for General Electric Supply Company in Philadelphia, was picked for the delegation by then-President Jimmy Carter. As a teenager, Chesonis had fled the Communist occupation of his native Lithuania and, over the years, has been a tireless worker for the rights of displaced citizens of the formerly



independent Baltic states of Lithuania, Latvia and Estonia. "As liaison for several American-Baltic organizations, I

represented their interests at the daily delegation meetings," states Chesonis.

The conference, which brought together delegations from the 35 nations that signed the 1975 Helsinki Accords on human rights and territorial integrity, addressed three main topics: cultural exchanges between nations; economic issues, including scientific and technical exchanges; and political issues such as human rights and military security.

"To represent one's country in a forum that could influence mankind's future is an opportunity only a fortunate few may have," adds Chesonis.

Modernization program. The Major Appliance Business Group will spend more than \$38 million over the next three years to modernize its dishwasher business by converting Building Three at Louisville's Appliance Park into an all-PermaTuf® tub facility.

The modernization will make PermaTuf tubs and doors

available in all GE built-in dishwashers. Currently available only in top-of-the-line models, PermaTuf tub material is an exclusive GE compound that will not crack, chip, peel or rust under normal use.

"General Electric is the largest manufacturer of dishwashers in the world," said Roger W. Schipke, general

manager—Dishwasher and Disposal Product Management Department. "This investment will give us the technological edge to stay ahead of domestic and foreign competition."

A new, third-generation tub design is included in the program, as is expansion of the PermaTuf compound preparation facility at Frankfort, Ky.

Light skiers. A cross-country race for the blind and physically handicapped topped off the 1981 Ski for Light program held recently in upstate New York.

Serving as honorary chairman of the event was former astronaut William A. Anders (left), GE Vice President and general manager of the Aircraft Equipment Division. Nobel Prize winner Dr. Ivar Giaever (right) of Schenectady's Research and Development Center also accompanied the skiers.

Ski for Light is an international program for teaching the disabled to ski. Each handicapped skier is paired with a sighted, able-bodied guide who



provides instructions, describes the course and paints verbal pictures of the scenery. The disabled skier follows pre-set tracks in the snow.

About 250 skiers and guides from the United States, Canada, Great Britain and Norway participated in this year's event.

How does GECC do it?

While other financial services languish, GE Credit Corp. keeps improving its results. What's the secret?



GECC's leaders: Larry Bossidy and John Stanger

I NTEREST RATES soaring to record highs. Recession-hit markets. Government-imposed restrictions on finance charges. Merchants discouraged from promoting credit sales and consumers wary about taking on new borrowing commitments. It's hardly a favorable climate for a business based on credit financing.

Yet the General Electric Credit Corporation keeps on moving to new records. In 1980, for example, GECC's Leasing and Industrial Loan Financing Department purchased and leased \$1.1 billion in equipment

— the first time that any financial institution passed \$1 billion in leases in one year.

From an organization that got its start financing credit sales of GE appliances, GECC has transformed itself into a multibusiness organization that now owns and leases more than 90 jet airliners, 43,000 railroad locomotives and cars, the country's largest fleet of merchant vessels, and a spectrum of industrial equipment ranging from automation systems to offshore oil drilling rigs.

The equipment-purchasing record is just one of many 1980

success stories for this wholly owned finance affiliate of General Electric:

- GECC net earnings for 1980 climbed to \$115 million, 28% greater than the \$90 million earned in 1979.
- This 1980 growth rate improved on GECC's average annual increase of 18% over the past five years.
- Earning assets — a key measure in GECC's business arena — increased 13%, coming near to maintaining GECC's 16% average annual rise over the past five years. The 1980 performance brought its portfolio to a value of \$8.9 billion.
- Return on average share owner's equity improved to 13.2% from 12.4% in 1979.

How does GECC achieve results like these when other firms are experiencing difficulty? The *Monogram* asked the affiliate's top officers — John W. Stanger, President and Chief Executive Officer, and Lawrence A. Bossidy, Executive Vice President and Chief Operating Officer.

"There's no one simple answer," Stanger says. "Rather, there's a complex of answers. Not the least of them is that GECC has GE's financial strengths behind it. But, as we see it, our real edge is superior service and innovation in service. Other companies have great financial resources. What we have are professionals who keep coming up with imaginative ways to help people and businesses finance projects."

Bossidy adds: "Our people succeed by knowing in great depth the markets they serve. GECC people who handle the financing of marine projects, for example, talk the language of skippers who run the ships.

And knowing these operations so thoroughly, they are first in coming up with new ideas that appeal to marine businesses.”

Listening to Stanger and Bossidy, a reporter derives a picture of GECC as teams of experts, with each team sharply targeted on one segment of the total range of financial markets. Stanger agrees: “We’re organized into 16 discrete businesses,

with each of the 16 specializing in the financial needs of a specific market or a group of markets.”

Consumer Financing innovates: “And each of the 16 benefited in 1980 from innovations it had initiated,” Bossidy explains. “Take the four components that make up the Consumer Financing Division.

(continued next page)



Innovations powering new business growth for GECC include: (top) Real Estate Financing’s projects in converting apartments into condominiums; (middle) Consumer Finance’s burgeoning business in imported car leasing; (bottom) aggressive growth by the Puritan Life affiliate; and Commercial and Industrial’s ownership of railroad rolling stock leased to major carriers.

Even though consumer markets were depressed, this Division managed a growth of 5% in its portfolio of earning assets. How? Its departments penetrated new markets. GECC leads, for example, in the fast-growing business of second-mortgage lending. Similarly, General Electric Credit Auto Lease found a market in leasing imported cars — and is now branching out with services that also include domestic cars. In addition, the Division went international in 1980. Its 50-50 joint venture with Toshiba Credit Corporation brought GECC-style services to Japan in 1980 — and exceeded all expectations for the first year. The new business generated by these initiatives more than offset the recessionary declines in other areas of consumer financing.”

GECC's biggest gainer in 1980 was the Commercial and Industrial Financing (C&I) Division. C&I's four Departments are the ones that get GECC involved in financing such outsize equipment as oil tankers, jumbo jets, railroad rolling stock and earth-moving equipment. Says Stanger: “In a practical sense, GECC years ago invented the concept of ‘leveraged leasing.’ Through the services of GECC, a company can use its assets — equipment, inventory, facilities, even business know-how — as the lever to increase its earnings. What this means in practice is illustrated by the example of one large shipping firm. Through a GECC lease agreement, the customer operates the two largest oil tankers ever built in the Western Hemisphere and enjoys the full use of and income from the vessels, without having to buy them.”

Working with customers in 1980 on new equipment ranging



New international thrust by GECC is represented by operations of joint-venture consumer financing in Japan.

from oil drilling rigs to mobile communications systems, C&I grew its earnings assets 20% to more than \$3.7 billion.

Business on this scale leads to some astonishing facts. Item: The fleet of tankers and other marine vessels owned by GECC totals 2.5 million dead-weight tons, the largest tonnage of U.S.-flag vessels under one owner. Item: GECC now has enough railroad rolling stock on lease to make a train stretching from Boston to Baltimore. Item: GECC's aircraft on lease to major airlines expanded to 93 planes — a fleet that, if GECC were the operator, would put it among the world's leading airlines.

For C&I, too, innovation was an important factor in last year's record performance. As an example, Bossidy cites the 1980 operations of Commercial Equipment Leasing. “The people of this Department anticipated that the deregulation of domestic commercial airlines, together with the increasing decentralization of industry,

would necessitate more business travel. So they moved in with financing plans for three segments of the aircraft market — commuter and business aircraft and short-term business aircraft rental. Their participation in these aircraft markets grew during the year to \$364 million in receivables.”

Another anticipatory move by GECC was discussed by Stanger: “We believe there will be a strong demographic-driven demand for housing during the 1980s. Every month in which high interest rates and inflationary costs hold housing starts to unnaturally low levels only builds the pent-up demand for housing.” GECC's response: organization, late in 1980, of a new Real Estate Financial Services Operations and the incorporation of the General Electric Mortgage Insurance Corporation. Says Stanger: “We have in place an organization that is already doing well in real estate and that is ready to capitalize on the projected rise in construction during this decade.”

A final area of innovation and profitable growth for GECC is insurance. “We have two growing insurance operations,” Bossidy explains. “Puritan Life Insurance Company increased its net earnings in 1980 by 20%, while Puritan Insurance Company, marketing property and casualty coverage, gained 18% in net income.”

Stanger sums up: “General Electric Credit Corporation is doing well because it is proving that financial services can be as active an area for new ideas and entrepreneurial talent as product businesses. GECC people are strong competitors. They win customer acceptance through their depth of knowledge, their innovation and their responsible performance in the interest of customers.”

Oceans of resources



Offshore platforms provide a huge market for many GE products and services.

The search for oil, gas and minerals offshore opens new waves of business for GE.

THE OCEANS. They cover more than two-thirds of the earth — so much, in fact, that it's been said the planet should be called "Water."

And under those heaving seas lie volcanic mountain chains and sandy bottoms as barren and desolate as the Sahara, only bigger. Under the oceans, too, lie vast deposits of oil, gas and minerals — a treasure-trove of resources that's just beginning to be pried open.

It wasn't until 1947 that the first commercial well was drilled beyond sight of land. Today, there are more than 3,000 offshore platforms worldwide. The fleet of mobile drilling rigs is also swelling, from 471 today to about 540 next year, as the search for oil and gas enters deeper and more distant waters.

The ocean floors contain many minerals, too, that can be dredged or scooped up to supply a resource-hungry world.

What part is GE playing in this escalating search for offshore resources? Some examples:

Ladd Petroleum went offshore for the first time in 1975. The subsidiary of General Electric's natural resources affiliate, Utah International Inc., owns a 25%-to-50% stake in six wells drilled off Louisiana and Texas in 1980, and is gearing up to possibly purchase acreage off California.

"Offshore, that's where many of the future giants — the huge reserves — lie," says Ladd's Ronald G. Spence, senior vice president for North American exploration. "The risks are much greater offshore, but so are the rewards. A \$5 million well offshore could turn into a \$200 million discovery."

Ladd isn't restricting itself to American waters. The Denver-based corporation recently participated in an exploratory well in the Adriatic Sea. It also has conducted seismic studies at possible drilling sites near the Philippines, the Congo, and the Caribbean island of Aruba.

Offshore platforms provide a huge market for General Electric's LM2500 industrial gas turbine.
(continued on page 13)



Among offshore areas involving GE are (clockwise, from above): North Sea platform equipped with industrial gas turbines; deep-sea tasks for underwater manipulator; Gulf of Mexico rig operated by Ladd Petroleum; Ocean Cay, where a Utah subsidiary mines aragonite; and platform off California, with GE engineers at drilling console.



bines. Derived from the Company's TF39/CF-6 turbofan aircraft engines, the LM2500 is a light-weight, compact and fuel-efficient machine highly suitable for offshore platform uses.

Schenectady's Gas Turbine Division (GTD) packages LM2500 turbine systems for industrial pipeline, process, platform and industrial generation applications. The Marine & Industrial Engine Division (M&IED) of the Aircraft Engine Business Group also sells the LM2500 to original equipment manufacturers (OEMs). Both components are experiencing heightened activity:

- GTD has received a contract for five systems that will provide electrical and mechanical power on Norway's Statfjord "C" platform, bringing to 16 the number of units sold for use in the North Sea's largest oil field discovery.
- M&IED has sold six gas turbines and 11 gas generators to OEMs for compressor drives on production platforms in Mexico's Bay of Campeche.
- The Abu Dhabi National Oil Company recently purchased two LM2500 gas turbine systems from GTD for an injection service project in the Persian Gulf.
- Most recently, an OEM purchased three gas turbines from M&IED for installation on a production platform in an Indian Ocean field west of Bombay.

For drilling wells, the high horsepower and compact size of the GE752 electric drilling motor make it the "standard of the industry," according to Calvin D. Neithamer, manager — Drilling Drives Sales for the Transportation Systems Business Division in Erie, Pa.

The motors furnish the power to raise and lower drill pipes, rotate the drill string, and run mud pumps that keep drill bits cool and bring cuttings to the surface.

The Drive Systems Department in Salem, Va., provides power conversion equipment and controls for running a rig or platform. A typical power control center, supplied by GE, can take up a 40-foot-by-12-foot room and cost half a million dollars.

GE POWER/VAC® metalclad switchgear, introduced in 1977, has been running up offshore sales since its first installation aboard a natural gas platform in the Gulf of Mexico. The customer chose POWER/VAC vacuum breakers because they can be stacked two-high to save floor space and require less maintenance than air magnetic switchgear.

Three other components — the Engineered Materials Group, GE Credit Corporation (GECC) and GE Information Services Company

(GEISCO) — are also involved in offshore drilling.

Engineered Materials supplies drillers with high-productivity STRATAPAX® diamond drill bits from its Specialty Materials Department and with 18 different grades of Carboloy® cemented tungsten carbide for wear-resistant drilling components from its Mining Products Department in Houston.


GECC has been financing offshore drilling rigs since the mid-1970s. Among its current projects: a shallow-water drilling barge to be delivered this spring off Texas; and a jack-up drilling rig under construction in Singapore, to be delivered in June. GECC also finances the vessels and helicopters that service platforms many miles out to sea.

GEISCO provides drillers with computer services that help them determine where and how to drill wells.

Thousands of feet below sea level lies another opportunity for GE. The Diver Equivalent Manipulator System, from Aerospace Business Group's Re-entry Systems Division, is used aboard manned and unmanned submersibles to support oil/gas exploration and production.

The manipulator provides the dexterity of a human arm, allowing operators to use the same type of underwater tools used by divers, only now in depths up to 3,000 feet. Recent missions have involved surveying oil well sites, repairing deep-water pipelines, and operating underwater drilling equipment in the North Sea.

Ocean mining is another offshore arena for GE. A Utah subsidiary, Marcona Ocean Industries, is mining aragonite in the shallow waters of the Grand Bahamas Bank. (Aragonite is an extremely pure form of calcium carbonate, used in the manufacture of cement, glass, fertilizer and for acid neutralization.)

Resembling a huge, underwater snowdrift, a 22-mile-long, two-mile-wide and 10-foot-thick deposit of aragonite near Bimini was the first site developed by Marcona. Before mining began, an 85-acre island — Ocean Cay — was built to accommodate all aragonite mining and shipping activities. Today, the facility dredges up more than 350,000 tons of aragonite per month. 



Two GE employees get lifted onto gas platform to begin startup work on POWER/VAC metalclad switchgear.

Talking through a jam

The new SEEK TALK radio system developed by GE for the Air Force utilizes a Company breakthrough in microelectronics.

TWO U.S. Air Force planes streak above enemy territory. Suddenly, electromagnetic interference from the ground jams their radios, making the pilots isolated and vulnerable. They are unable to warn each other or talk to their home base.

This scenario led the Air Force's Electronic Systems Division into an intensive search for a jam-free UHF AM radio communications system, for which it established a top priority program called SEEK TALK.

As one of two contractors working on this program, General Electric's Aerospace Electronic Systems Department (AESD) in Utica, N.Y.—part of the Aircraft Equipment Division—has developed a SEEK TALK radio system that's more than jam-resistant. It also allows a third pilot to break in on a two-way conver-



Pilots will be able to thwart jammers with new SEEK TALK system.

sation to warn the other pilots of an impending threat—a vital combat capability.

To countereact jamming, the SEEK TALK system uses a wide radio band, or spread spectrum, along with a special antenna. "Instead of using just one radio channel, the coded signal is sent over a wide band," explains William C. Bradbury, sales manager for Communications Countermeasures at AESD. "This makes it very difficult and expensive for

a jammer to beat you, because the jammer would have to put noise into the whole spectrum. It would take a tremendous power system to do that. Spreading the signal over a wide band also lessens the chance of an enemy listening post knowing you're there."

The antenna "looks" at every piece of noise being directed at the aircraft, then separates the jamming noises from the regular transmissions. "Picture two people talking on their CB

radios when a large truck passes between them,” says David J. Rossi, AESD marketing manager. “The noise generated by the truck’s ignition wipes out their conversation. SEEK TALK sorts through that type of interference to pick out the right signal, allowing the communicators to hear each other.”

The SEEK TALK system also works with a cryptographic coding unit to make strategic messages secure from enemy intelligence.

The key capability to break in on an established conversation in a spread spectrum system owes its existence to the Company’s pioneering work in microelectronics. Each SEEK TALK unit contains Surface Charge Transistors (SCT), a Corporate Research and Development breakthrough in the mid-1970s that allows extra-high-speed processing of data. For example, 12 SCT correlators (each the size of a match head) provide more than six billion operations per second in the current SEEK TALK system.

According to Herbert J. Kindl, general manager, AESD, the SEEK TALK program “is another instance where the Company’s research into microelectronics and the application of large scale integrated (LSI) circuits to our business has proved to be very important to our success.”

AESD began working on SEEK TALK in 1978. “To date, we have received contracts totaling several million dollars to develop this system,” adds William J. Marks, manager of Data and Space Electronic Systems Sales at Utica. Marks



AESD General Manager Herbert J. Kindl (right) reviews SEEK TALK model with Sales Manager William C. Bradbury.

notes that advance development models are currently being flight-tested by the Air Force and that GE has received funds for full-scale engineering and development of the product. The next step, in 1983, will be procurement of full-scale production.

If the program develops according to schedule, the first

installation of SEEK TALK units will take place in 1985. These highly sophisticated “black boxes” will interconnect with the UHF AM radios in many different types of aircraft and ground units, giving pilots reliable air-to-air and air-to-ground communications during the most severe jamming situations. ▲



Utica's William J. Marks discusses the new system with military personnel at Air Force Association show in Washington, D.C.



Corporate catalyst

GE's Aerospace Technology Transfer Program accelerates commercial spinoffs from R&D, aids in productivity and new product development.

IN EARLY 1978, Fort Wayne's Commercial Power Supply Business had a problem. For many years, it had been a leader in sales of power supplies to photocopier manufacturers, but as the market demanded better performance from copiers, the need for a new high-frequency switching power supply technology grew. The Business wanted to pursue this new market opportunity, but needed additional resources to develop the technology. Undaunted, it asked for — and immediately got — help from the newly formed Aerospace Technology Transfer Program (ATTP).

The Program, conceived in 1977, has two goals. First, it

seeks to spin off R&D in the Aerospace Business Group by establishing close working relationships between ABG experts and technical groups in the Company's operating components. Second, through this transfer of technology, the Program helps components acquire new skills or strengthen old ones, improving their products and productivity.

Says Dr. Arthur M. Bueche, Senior VP — Corporate Technology: "Since its inception, the Program has provided 'seed' money for 40 projects, involving almost every Company Sector. In 1980 we funded 18 projects with a budget of \$1.7 million. About two-thirds of the funding is aimed at new or

improved products, while the remainder is targeted toward the development of new or improved processes."

To achieve ATTP board approval, each project must satisfy a number of criteria:

- Uniqueness of technology: this year the board has placed special emphasis on the encouragement of electronics-related proposals.

- The ability of the SBU to retain the skills developed in the program.

- The commitment within the SBU, evidenced by matching SBU funds for the project and its inclusion in the SBU's strategic plan.

- And finally, the potential business impact on the SBU, as

◀ Fort Wayne Power Supply Venture lab technicians Tom Kyle (l) and Dave Homan check power supply circuit against schematic drawing.

measured by projected sales or productivity gains within a reasonable time frame.

In the case of the Power Supply Business, the board's faith in the project was such that a total of \$619,000 was granted, allowing the Business to take advantage of technology developed in Syracuse's Electronics Lab. The project, called the Power Supply Venture, began with two competing teams, one staffed by the E-Lab and members of the Power Supply Business, the other by Power Supply Business employees only. Each worked on a different technical approach to the problem.

"The ties between the teams became close enough to share ideas, and the blend of the two technologies was better than either by itself," says Roger O. Grosso, manager—Programs and Business Administration, Power Supply Business. "The result was a compact switching power-supply device that could take 120- or 240-volt ac power and transform it into highly regulated, low-voltage dc power."

The market response was excellent. The Power Supply Business landed an initial order from one of its major customers for 12,000 units per year, worth \$780,000 annually. In April, it begins supplying the devices for computer applications, paving the way to an estimated \$5 million in computer power supply sales in 1982. The Business has also been able to substantially reduce its variable manufacturing costs.

Employees at Lexington's Miniature Lamp Plant feed parts to Automated Lamp Alignment System. ▶

"The Power Supply Venture was unquestionably one of our most successful projects," says Dr. John P.D. Wilkinson, manager—Research & Development Application Operation and former secretary of the Aerospace Technology Transfer Program. "But it's not unique. A look at two of our other projects gives an idea of the diversity of successful projects supported by the Program."

When Lexington, Ky.'s Miniature Lamp Department facility needed help in developing plant machinery, it also turned to the Aerospace Technology Transfer Program. Working with Aerospace Business Group, Miniature Lamp developed the Automated Lamp Alignment System, used to align the inner bulb in the reflector of halogen headlamps. The system draws upon Aerospace's radar signal-processing technology.

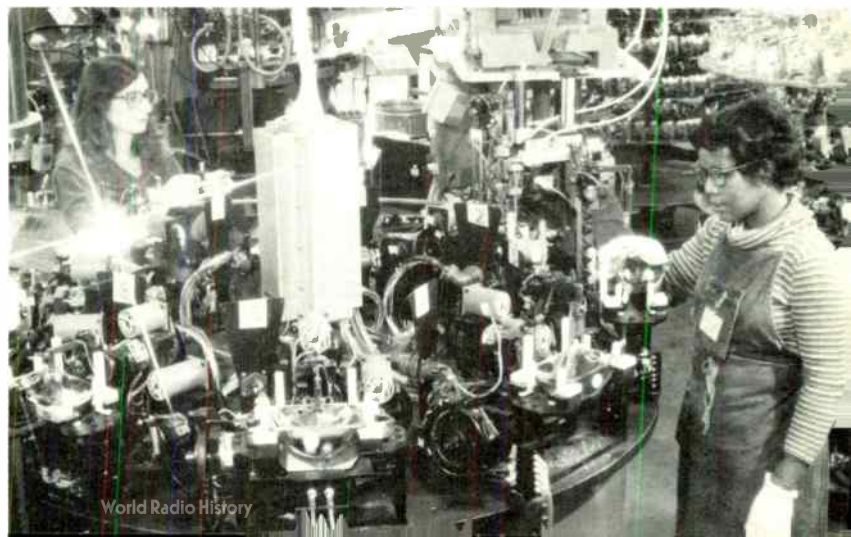
Says Frank J. Jayne, manager—Project Engineering, Miniature Lamp Department: "The mechanical system we were using was unable to adjust for variations in the components. Almost one-half of the finished headlamps had to be reworked. But the new optoelectronic machine automatically adjusts for variations, making a perfect headlamp 95% of the time. We're estimating annual cost savings

of \$120,000 and, of course, an improvement in quality."

In the Technical Systems and Materials Sector, the Program is supporting a partnership between the Aerospace Business Group and the Medical Systems Business Division, which has developed a sophisticated display controller system. One application is in the "STAR" nuclear medicine data processing system, which has unique requirements for display, analysis, and film recording. This project received \$280,000 in Corporate funds during 1979-80. The payoff: Milwaukee is predicting a \$6,000 cost savings in each STAR system it sells—and it's projecting 1981 sales of 50 to 100 units.

"The bottom line," says Data Processing Manager Robert G. Deuster, Nuclear Diagnostics, "is that by 1983, this technology transfer is expected to yield a cost savings of more than \$2 million per year."

Sums up Wilkinson: "We think that the Aerospace Technology Transfer Program will continue to serve as a catalyst for technology development in Company components. And productivity improvements of \$1.5 million and cost improvements of \$4.5 million in 1980 seem to indicate that it is succeeding in doing this." ■



GE purchasing managers: setting new standards



Members of Bridgeport's Corporate Purchasing Staff (l to r): John Cologna, Chuck Hazen, Ro Carreker, Bill Crawford and Vince Gregg.

Today's purchasing professionals don't just bargain for price; they're experts in everything from customs and commodities to conservation.

PERHAPS the first purchasing agent in recorded history was a biblical slave named Joseph. He lived in Egypt and served the Pharaoh, who was troubled by dreams about seven fat cattle and seven emaciated ones. Joseph, who had an extremely reliable source of information, correctly interpreted this dream as a forecast of seven fat years, to be followed by seven lean ones. He therefore bought large quantities of grain during the fat years to sustain Egypt during the lean years.

"And, just as reliable information was essential to Joseph's success, so the most important news item in purchasing today is the information technology explosion," says Bridgeport's Vincent P. Gregg, manager—Material Resource and Traffic Operation. "A purchasing manager's

function has always been to spend his company's money for materials and services as wisely as he can," Gregg continues. "In the old days, only one factor was dominant: price. Now, new factors are considered: analysis of long-term availability, transportation and customs constraints, and the possibilities of standardization, materials substitution, conservation or productivity improvement. By sharing information about these factors on a corporate basis, we are able to contemplate a level of cross-organizational activity and consolidation that was never before possible."

One of the results of this consolidation is the Commit Council, formed in 1978 to take advantage of the group buying power of 300-plus GE locations. Says Charles L. Hazen, manager—Corporate Purchasing—Contracting: "The Commit Council allows us to contract on a Corporate level for catalogued materials and equipment commonly used throughout GE. There are two types of contracts. First: corporate purchasing agreements, in which there is no

commitment by GE to do any amount of business; vendors offer an 8-10% price advantage in hope of gaining a greater share of GE requirements. Second: commit contracts, in which individual components agree to buy certain quantities of a given material and a contract is then issued for the total amount that these components will require. This type of contract offers a further price advantage of up to 14%."

Western coordinator of the Commit Council, Nicholas J. Music, manager of San Jose's Material Purchasing Operation, echoes Hazen's enthusiasm: "The volume that we have as a group gives us good leverage with our suppliers. Since 1978, the components participating in the Council have shared savings of \$3.5 million."

But what happens when components need materials that are not available through catalogues—for instance, minerals that are in short supply? That is the province of Corporate Material Resource Analysis Manager Roland P. Carreker. "Many of the minerals GE uses are scarce and/or come from fairly volatile areas of the world," observes Carreker. "So we are constantly asking ourselves: Where are costs headed? What is the world supply situation? What are likely to be critical materials? What steps can we take to assure continued supplies?"

To answer these questions, Carreker makes trips around the world to survey suppliers and seek new ones. He publishes quarterly studies of the supply/demand and price situations for minerals, and assists in preparing materials resource plans, in which specialists analyze the world situation with respect to their commodities.

Information of this type is essential to specialists like Fort Wayne's Thomas A. Natale, manager—Motor Group Purchasing and Transportation Operation, and David E. Floyd, Group Steel Contracting, Motor Technology Operation. The two work together to assure the Motor Business Group of a steady supply of quality steel, aluminum, and other major commodities. "We combine all steel purchasing in the Motor Group for price or technological advantage," says Floyd, "and offer vendors more business in exchange for material innovations."

Adds Natale: "Many of our suppliers worked with us and the metallurgists in MTO to develop materials which ultimately yield better motor performance and/or pricing."

Critical materials are also a problem for the Aircraft Engine Business Group, which uses such scarce elements as titanium, cobalt, chrome and molybdenum.

"We've initiated recycling programs," says Evendale's James R. Walz, manager—Aircraft

(continued next page)



San Jose's Nick Music



Fort Wayne's Tom Natale (l) and Dave Floyd

Erie's Ted Czapski (r)





Louisville's Don Schlierf

Engine Materials, "and design reviews to engineer elements out of alloys for certain parts. We also fostered conservation programs to buy raw materials closer to finished part sizes and to forge parts at higher temperatures, allowing us to use smaller amounts of material."

The idea of using improved casting and forging methods to reduce costs has a parallel at Erie's Locomotive Manufacturing Department. Two years ago, the Department originated a Product Application and Cost Evaluation (PACE) program, the object of which is to create a close relationship between the Locomotive Manufacturing Department and key suppliers in order to optimize reliability and reduce costs.

The program, as described by Tadeus Czapski, manager—Diesel Engine Purchasing, is ingeniously simple: "We have management, engineering, quality control and manufacturing people from GE and our suppliers get together for a preliminary meeting. We convey to the vendors what our total business picture is and they share with us what they think are the unique features of their companies. We realize that we can use some expertise in a number of areas, including better foundry techniques, so we ask the suppliers to make recommendations regarding quality, reliability, value and engineering. These are reviewed by committees here at Erie, which decide which recommendations should be implemented. The PACE program has saved \$2 million through productivity improvements since 1979."

The relationship between GE and its vendors

is also a key part of doing business with overseas suppliers. "Personal relationships are very important, especially in the Far East," insists Louisville's Donald J. Schlierf, manager of Major Appliance Business Group's International Purchasing Operation. Schlierf has responsibility for foreign buying offices in Japan, Korea, Taiwan and Hong Kong, from which he contracts to import goods for 17 GE manufacturing locations. He is continually trying to develop opportunities in new countries as well. "Just as we sell in world markets, we must buy in world markets to take advantage of lower price, assured supplies, or both," concludes Schlierf.

Concurs John D. Cologna, manager—Corporate Purchasing-Planning and Development: "In spite of the customs paperwork, documentation, transportation and warehousing problems that have to be worked out, it is important to develop international purchasing programs where they are cost-effective." Cologna's operation is responsible for the development of tools and skills that the buyer can use in improving his decision-making. His staff supervises analyses of cost implications on engineering specs, pulls together information on equipment suppliers, helps components to develop international purchasing programs and runs two international sourcing offices—one in Bologna, Italy, for tools and equipment, the other in Tokyo for electronics parts.

The latter is a key area for GE, and over the past 15 years, the Industrial Electronics Council has saved \$35 million by providing a means for Company-wide sourcing and purchasing of electronics parts. "The beautiful thing about the Council," says Council Chairman Earl E. Ackley, manager—Purchasing for Lynchburg's U.S. Mobile Radio Department, "is that we are a voluntary group of 15 entities that cuts across sectors, groups, divisions and departments. We pool our needs to negotiate the best possible price and recently initiated a data base that plots our usages, analyzes price quotations and helps us decide with whom we should write our agreements."

The data base was the brainchild of William P. Crawford, manager—Corporate Purchasing-Electronics. "Many components were using the same parts, but calling them by different names," says Crawford. "We got everyone to code these parts the same way, enabling us to write a computer program to consolidate orders in the most efficient possible way. And, as a measure of our success at doing this, one of Intersil's first actions after becoming part of the Company was to join the Council!"

▲



Hook, line and sinker

Many an angler from GE has a fishy story to tell.

THIS STORY is about the big one that *didn't* get away.

About three years ago, Lynn's Robert L. Yeaton, manager of manufacturing technology at the Aircraft Engine Business Group's Satellite Manufacturing Operation, went deep-sea fishing off the Massachusetts coast.

"There were two of us in a 19-foot boat," he recalls, "and we hooked a giant bluefin tuna. It dragged that boat around, fighting us for more than an hour."

When the struggle ended, Yeaton had himself a 10-foot, 995-pound tuna. And what do you do with half a ton of tuna fish? "We sold it to the Japanese," answers Yeaton, who goes tuna fishing regularly. "They wait at dockside to buy your tuna, then air-freight it back to Japan where it's considered a delicacy. The money (\$2 per pound and up) helps defray our costs."

New Zealand is a Pacific paradise for fishermen. "The best trout fishing in the world," says Schenectady's Tracy Lamanec, a Materials and Processes

(continued next page)

Laboratory chemist, who went there on a fly-fishing vacation several years ago. "You can't read about fly-fishing without



Larry Dowling



Robert Yeaton



Thomas Kaufman



hearing about New Zealand's trout. Up here a 20-inch trout is something to talk about for years; down there it's the average size."

Fly-fishermen back home have read about his New Zealand adventures, too, because Lamanec writes a weekly fish and game column for the local newspaper, the *Schenectady Gazette*. A member of the Outdoor Writers Association, he's been writing the column for 11 years, covering everything from where to fish to how to tie a fly.

"In an hour I could teach you the basics of tying a fly that would catch fish," adds Lamanec, who has "never fished with a fly I didn't tie."

The perfect fishing hole is the dream of every angler. George Bright says he's found it. The General Electric Credit Corporation employee, who works in Palo Alto, Calif., took his fishing gear into Idaho's Sawtooth Mountains and stumbled across a deep pool at the confluence of two streams.

Bright describes it: "There was good headwater coming in, the water was cold for July and there weren't any overhangs." There weren't any other fishermen, either. For three days he fished that spot, reeling in dozens of trout up to 15 inches long.

An avowed fisherman, Bright remembers finding another great fishing hole in Idaho. While wading into the stream, he stepped on some twigs. WHACK! Two feet away, a beaver's tail slapped the water. "I was stepping on his home," Bright adds sheepishly.

To Larry Dowling, the perfect

fishing hole is eight inches wide and two feet deep—in the ice on New Hampshire's Lake Winnepesaukee.

"A lot of people think we're crazy, going fishing when it's below zero," says the Hookset, N.H., accounting manager, one of several ice fishermen from the Aircraft Engine plant. "But the fishing's good, the air's crisp, and the lake looks like a 35-mile-long skating rink."

Dowling and his fishing pals usually cart their "bobhouses," small shelters, onto the ice in January and spend every weekend there drilling holes and catching fish. The season ends in late March or, as Dowling says, "when your bobhouse starts sinking through the ice."

Instead of catching fish, Philadelphia pensioner Michael Cerwinka raises them. As a member of the Delaware County Anglers and Conservationists, the former manager in the Switchgear Business Department has helped thousands of fingerlings become healthy 12-inch trout.

Although this winter was spent rebuilding the trout holding pens, the group usually raises about 5,000 fish and releases them into creeks frequented by convalescents, disabled vets and inner-city children.

Cerwinka admits "becoming attached" to his fish. "It's like having children," he says. "Sometimes I feel like I'm the father of 5,000 trout."

Thomas Kaufman has probably caught 5,000 fish over the years. A methods specialist for the General Purpose Control Department in Bloomington, Ill., he's been entering—and winning—bass tournaments

Jim Ledbetter

Tracy Lamanec

since 1973.

“You have to be able to think like the fish,” notes Kaufman. “Before a tournament, I’ll try to



George Bright



Michael Cerwinka




fish the lake, looking for the best structure — things like rocks, contour, depth and seasonal patterns that will hold fish in one spot.”

Bass tournaments can last from one to three days and involve 20 to 300 fishermen. They must fish from boats, use artificial lures, and cannot exceed the state limits for size and number caught. The one whose total catch weighs the most is the winner. Since the fish are usually put back afterwards, anglers lose points for any dead fish.

Kaufman currently is tournament director for the Illinois State Bass Federation, was its high point leader in 1980, has been on the state’s six-man national tournament team in four of the past seven years, and has come home with more than 75 fishing trophies.

Many fishermen in the Carolinas tune in “The Piedmont Sportsman” every Thursday night between January and June to watch Jim Ledbetter. Now in his 10th year on WHKY in Hickory, N.C., the Distribution Transformer Business Department maintenance worker covers all aspects of the sport on a show that’s seen in eight counties and 12 other cities.

“I do a lot of how-to shows for beginners,” explains Ledbetter, who’s been fishing for 40 years. He also gives fishing reports, interviews expert anglers and discusses new techniques. And when he’s not before the cameras or on the lakes, Ledbetter’s out doing promotional tours for lure companies.

And now, about the one that got away... 





Cleveland's Richard L. Hansler, Lighting Business Group research advisor, helped form the Lutheran Housing Corporation seven years ago. He's been its president ever since. The LHC buys foreclosed homes, refurbishes and sells them, at easy terms, to low-income families in the area. Some 78 homes have been fixed and sold this way.

1981 Phillippe Award winners:

They gave time and talent

FIVE GENERAL ELECTRIC employees who have helped their communities and the disadvantaged have been named winners of the 12th annual Phillippe Awards for Distinguished Public Service.

The winners (pictured here) receive medallions and the right to pick a charity or educational institution for a \$1,000 grant from the GE Foundation.

The awards are named after Gerald L. Phillippe, former GE board chairman and public service leader. Over the years, 59 individuals and two teams have been selected from among 943 employees nominated for the awards.



Acting as a role model for women and minorities, Bridgeport's Joan Carter (center) has motivated and counseled underprivileged youths to pursue technical careers. The Corporate Production and Operating Services program manager has tutored youngsters since 1974, helping 17 enter college, and has given many vocational talks.



To the disadvantaged in the Diadema area of São Paulo, Brazil, Dr. Ludmila C. Kitzig is Florence Nightingale. A labor physician at GE do Brasil's Santo Andre plant, she provides free medical care at a day care center and to poor families in the area. She also runs a pharmacy that dispenses 12,500 free prescriptions each year.



When Cincinnati's urban transit system ran into trouble, John W. Blanton (right) took the driver's seat. A general manager in the Aircraft Engine Business Group, he served on the regional transit authority's board for 12 years, including six as president, and helped develop an efficient, well-managed system that doubled its ridership.



BeBee Holdren (left) led an inner-city renewal in Lynchburg, Va. The U.S. Mobile Radio Department machine operator founded the Garland Hill Neighborhood Association, got the area designated a state historical district, and helped convert two old schools into modern, low-income apartments.

Organization Changes

CORPORATE

Fred W. Garry, VP—Corporate Engineering

CONSUMER PRODUCTS AND SERVICES SECTOR

Thomas J. Albani, General Manager—Housewares Operations

Dennis D. Dammerman, VP and General Manager—Commercial Financial Services Department, GECC

Ronald W. Mathewson, General Manager—High Intensity and Quartz Lamp Department

Harry T. Rein, General Manager—Photo Lamp Department

Joseph F. Vercellotti, General Manager—Lighting Manufacturing Technology and Equipment Programs Department

INDUSTRIAL PRODUCTS AND COMPONENTS SECTOR

Roy L. Beaver, General Manager—Transportation Equipment Products Department

Jack M. Kirker, General Manager—Locomotive Products Programs Department

Charles M. Watland, General Manager—Locomotive Manufacturing Department

INTERNATIONAL SECTOR

John A. Hinds, General Manager—Latin American Business Development Division

POWER SYSTEMS SECTOR

Randall J. Alkema, General Manager—Large Steam Turbine-Generator Department (Engineering and Manufacturing)

Edwin F. Phelps, General Manager—Energy Applications Program Department

TECHNICAL SYSTEMS AND MATERIALS SECTOR

Eugene F. Apple elected a Vice President

Alastair C. Gowan, VP—Engineered Materials Technical Operation

Robert J. Gerardi, General Manager—Metallurgical Business Division

Ronald B. Schilling, General Manager—Medical Systems X-Ray Programs Department

GE's historical photos: 3



Cleopatra gazes soulfully at—Marc Antony? No, at a General Electric Mazda[®] lamp in this early Company promotion.

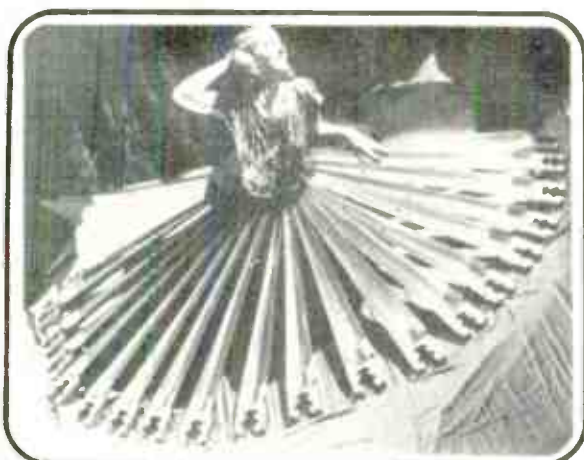
**Product
promotion
—early
GE-style**

Don't ask for the logic of Cleopatra holding a GE Mazda lamp or of a model clothed in turbine buckets. They make striking images, don't they? And that was what long-ago promoters of General Electric products were after: eye-catching photos that would find space in the nation's press, giving a not-so-subtle boost to a GE business.

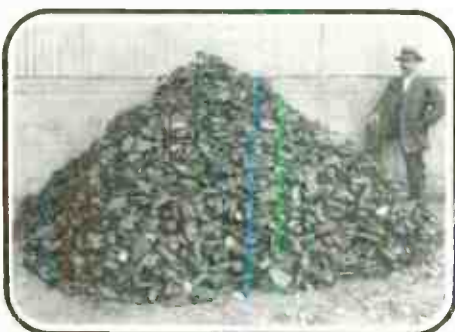
Similar impressions of early GE "hype" are scattered through General Electric's historical photo file, now being rescued from decay and winnowed to make available the more outstanding glimpses of the Company's past.



Beauty and the Beast were both enlisted to help sell General Electric lamps in the thirties. The beauty: Rita Hayworth, promoting sunlamp and timer. The beast: movie horror man Boris Karloff, giving a nudge to GE "midget sun" lamp.



Midgets and giants: Circus star Tom Thumb naturally holds world's smallest lamp while his behemoth buddy grasps the largest GE lamp. Turbine-bucket skirt looks great on Mary O'Neill. But wait till she tries to stand up.



To sell electric irons, GE promoters took old flatirons in exchange—and built this mountain of scrap metal. Same with coffee pots: If it worked for irons, why not percolators?

Energy-efficiency is the name of the game in home-building —and GE products help builders meet their energy goals.

IN ARIZONA, it's Ahwatukee, "House of the Future." In Connecticut, it's the Sun/Tronic House. And in New Jersey, it's the new Sundance development.

Different house styles — different builders and architects — but each of them with the same underlying theme: the creation of a beautiful home that is responsive to today's lifestyle and, at the same time, as energy-efficient as today's technology can make it.

It's significant, therefore, that all three have chosen to include Weathertron® heat pumps in their plans.

The first custom-built house at Sundance, near Atlantic City, N.J., boasts the first installation anywhere of the new Executive II Weathertron heat pump, with a two-speed compressor, and its complementary GE DMC2000 Digital Monitoring Control, a computerized thermostat designed specifically for use with the Executive II.

At Sundance, the builder has created a thoughtful design that takes advantage of the sun, good insulation and the heat pump for heating and cooling — all with energy-efficiency in mind. The Executive II operates on low speed 90 percent of the time, switching to high speed only in extreme weather, and the electronic thermostat provides automatic temperature control. Choosing the Weathertron heat pump was easy, the builder says: "It's the finest heat pump available from A to Z."

In Greenwich, Conn., General Electric was one of 20 national companies that helped sponsor the Sun/Tronic House conceived and built by the Copper Development Association. The innovative "idea home" for the 1980s utilizes both solar heating and direct generation of electricity from the sun, a two-story greenhouse/solarium, and a battery of home computers that function as servant, secretary, guard, entertainer and accountant.

In addition to the all-GE kitchen and two Weathertron® heat pumps, the Company is represented in the house by a number of TV sets, including the Widescreen 3000 Home Television


Theater, by GE radios and housewares, and by a number of lighting products, such as incandescent reflector bulbs, luminous ceiling panels and strip lighting under kitchen cabinets.

The Sun/Tronic House has been certified as energy-efficient by the National Energy Watch, a conservation program developed by the Edison



Electric Institute for the electric utility industry.

Highlighting GE contributions to Arizona's Ahwatukee, designed by a Frank Lloyd Wright Foundation architect, is an imaginative and energy-conscious lighting plan for the entire house, designed by GE lighting experts, and featuring Soft White fluorescent tubes and Circline® fluorescents for both general and specific-task lighting.

Kitchen and laundry equipment and wiring devices — plus, of course, the Weathertron heat pump — in the "House of the Future" are also from General Electric. 



CONNECTICUT

In the Sun/Tronic House's sun-filled kitchen are GE's side-by-side refrigerator/freezer, Potscrubber III® dishwasher, Microwave Cooking Center and slide-in range, compactor, and a number of housewares products.



ARIZONA

In Arizona's "House of the Future," one of the exciting design features is the "conversation pit"—made even more dramatic by the versatile fluorescent lighting designed by General Electric.



NEW JERSEY

The first of the new Executive II Weathertron® heat pumps was chosen by the builder of Sundance in Atlantic City to efficiently heat and cool the first custom home in the development.





The globalization

To help the Company succeed in the world marketplace, Management Education Operation is teaching GE managers to think internationally.

CROTONVILLE, a quiet hamlet in New York state far from the business bustle of Frankfurt and Tokyo, seems an unlikely place for General Electric managers to be gaining a global perspective that is helping the Company compete successfully in today's international marketplace.

But at Crotonville, home of GE's Management Development Institute, "globalization" is a strong thread that runs through an increasing number of the educational courses and seminars taught there. When managers leave the Institute, they have an enhanced understanding of what is meant by "global perspective," and are better prepared to use what they have learned in their day-to-day business.

"Our broad educational objective," points out James P. Baughman, manager of the Company's Management Education Operation (MEO), "is to

increase the ability of GE managers to think and act effectively in a global environment. In pursuit of this goal, we are cooperating with the functional education activities of Corporate Consulting Services, and with the broad international educational experience of the International Sector."

Why is a global perspective so important for GE managers? H. Michael Hayes, manager of Crotonville's Executive Education Operation (EEO), explains:

"Changes in communication, transportation, and world economics have reshaped the nature of business opportunities for GE. At the same time, the nature of our competition has dramatically changed. GE businesses are now finding that they are competing not only against American companies, but against an array of companies that operate worldwide. Where we used to think of Westinghouse as our principal competitor, today we have to think of Siemens, Hitachi and Philips as well.

"Our role at Crotonville is to do everything we can from an educational standpoint to enhance the ability of GE managers to operate more effectively in what for many of them is a new and different environment. That ability," according to Hayes, "includes developing a global sense of opportunity as well as a global approach to business strategy. The international dimension permeates every one of our courses in executive education."



of Crotonville

Along with the globalization of its existing courses, the EEO has also added a new program—International Management Course (IMC), which will be taught for the first time starting in June. Its objectives are to help Company managers develop a GE relevant global perspective and improve their knowledge and skills to plan and manage in that context.

“But globalization for Crotonville,” notes Baughman, “is not limited to just the Crotonville classroom. One of the major efforts at MEO is distributed education—the design of courses for delivery at other locations. Eleven courses, such as the Management Practices Course, Foreman Supervisor Program, and Manufacturing Studies, are packaged so that they can be taught by GE instructors at Crotonville or elsewhere. Such courses have been offered at 14 different locations around the world, and 135 locations in the U.S.”

So for Crotonville, globalization is not just enhancing the content of existing programs, but developing:


- New operating locations outside the United States;
- New languages of instruction besides English; and
- Educational consulting in support of specific Sector and SBU international needs.

“The goal of those activities,” states Baughman, “is a truly worldwide system of management education in support of the Company’s global business strategy.”

International business has long been a General Electric tradition. But as the Company looks to the 1980s and beyond, it is expected to significantly increase its share of the world market.

Today, for example, 42 percent of GE earnings come from outside the U.S., and some 29 percent of GE employees live outside the U.S. By 1990, about 50 percent of the Company’s sales are expected to take place in the international arena.

Thus, the globalization of Crotonville takes on increased importance.

States Baughman: “We want to reach GE managers wherever they operate, providing them with opportunities to build a global perspective and to sharpen their knowledge and skills. Last year, 3,000 GE employees attended MEO-designed courses in countries like Brazil, Canada, England, and Switzerland besides the 5,000 who came to Crotonville and the 25,000 who attended MEO courses at other locations in the U.S. The Management Education Operation will expand this availability and impact through a broader network of affiliated programs in multiple locations throughout the world, while continuing to offer its resident courses and special Crotonville experience.” 

GENERAL  ELECTRIC

General Electric Company
Fairfield, Connecticut 06431



BUBBLE MACHINE. Every minute, 260 feet of milky polypropylene plastic come out the top of this two-story-high machine (left) at the General Electric Capacitor Products Department (CPD) plant at Fort Edward, N.Y. Shown here, Process Operator John Cross monitors the "blown tube" process, which turns the plastic into a six-foot-wide sheet of film of varying thickness. The film is narrowed by rollers atop the machine and then cut and wound for use as an insulating material for power capacitors. The Company is a leading producer of capacitors, such as the ones surrounding Carole McGraw (above) at CPD's Hudson Falls, N.Y., plant. Energy-saving devices, capacitors are used not only to reduce energy usage by fluorescent lighting systems and motors, but also to assure a steady electrical supply for computers, television transmitters, photocopiers, high-power lasers, radar and oil exploration equipment. GE manufactures more than 50 million capacitors a year.