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**ENERGY: ITS FUTURE IS ELECTRICAL**  
Plus—Retirement planning, Sunday artists,  
four-channel sound





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Editor  
WILLIAM KERMIT BARCLIFT  
Associate Editor  
EDWARD H. MORGAN, JR.  
Editorial Assistant  
CAROL A. OLCHA  
Design  
LIKA ASSOCIATES, INC.

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**Cover:** Young Indian artist Salim Patell's interpretation of the consequences of the energy fuel shortage—an accelerated transition away from a petroleum-based economy to one that relies increasingly on electricity.

THE COMPANY

THE ENERGY FUTURE IS ELECTRICAL

Rarely has a year begun with so many uncertainties. People everywhere are sorting out the consequences of the energy fuels shortage—the effects on the economy, on businesses, on jobs and on individual life styles. The first nine pages of this 1974 lead-off issue of the Monogram explores this abrupt new theme from several perspectives—managerial, economic, legislative and individual. But from even this partial, preliminary appraisal, one aspect of the energy crunch begins to dominate: with all the disruptions and personal hardships for many GE people in the months ahead, the longer-term consequence is an exciting challenge, an extraordinary opportunity: to accelerate the shift toward an electric economy, to make electrical technology more fully a part of the solution, to broaden General Electric's service and thus to enhance its growth. Or, to put it in its essence: the energy future is electrical.

1974 Management Conference: a larger future, faster

General Electric's annual Management Conference has traditionally provided the occasion when top managers have set their objectives for the new year and compared notes on how to move most strongly toward those goals. The 1974 conference, held January 9 to 11 in Belleair, Florida, was no exception. But there was an added dash of gusto



**Reg Jones at 1974 Management Conference: "aim at a 50% share for the percentage of fuels converted to electricity."**



**Dave Dance:**  
"Differentiate between what's possible this century and what may be possible in the next."



**Tom Paine:**  
"The oil embargo could be the 'Sputnik' launching nuclear power."



**Hersh Cross:**  
"We in GE are raising our fuel conservation sights to a 15% savings."

to this 1974 gathering. It came from the realization that the energy fuels shortage, with all the difficulties and disruptions it imposes, also suddenly presents the electrical industry the potential for a larger future, faster, than previous projections dared to project.

Chairman of the Board Reginald H. Jones covered both sides of the equation in his opening remarks to the 374 attendees. The short-term picture, he said, features "a troubled first half . . . an economy plagued simultaneously by inflation, shortages of fuel and raw materials, and attempts at government control that may do more harm than good."

But over the longer term, he added, "the energy crisis, with its drastic change in energy economics, is a unique opportunity to accelerate the development of the electric economy, lifting the proportion of energy consumed in producing electricity from the present 25% to, say, 50% by the end of the century."

He gave as one main reason for this optimism: "The Arab oil embargo can open the doors to major energy uses that were substantially closed to electricity in the past—home heating and electrification of high-density railroad lines, as examples."

Additional facets of the opportunity were highlighted by other speakers at the conference. Vice Chairman W. David Dance saw the oil embargo bringing about "a re-thinking of the most efficient utilization of available energy resources and others that may become available from advances in technology."

He called for a realistic appraisal of the energy future: "This work falls into two broad categories: what's possible *this* century; and what *may* be possible in the next century."

On the basis of what will be economically viable, he assigned to the next century such energy

*(continued on next page)*

## ENERGY (continued)

sources as nuclear fusion, widespread use of solar energy, fuel cells and hydrogen water-splitting. Geothermal energy, he felt, might come sooner.

Among the options open to society in this century, he gave heavy emphasis to three that "can mean a major difference by 1990 and beyond":

- **Increasing the efficiency of conventional power generation equipment.** Much has been accomplished, he agreed, since the first GE steam-turbine in 1900 chewed up some seven pounds of coal to produce one kilowatt-hour. Today's giant GE power-makers use as little as 12 ounces. But the innovative pressures must be kept up—especially in such areas as more efficient gas turbines and in combined-cycle steam and gas-turbine generating plants.

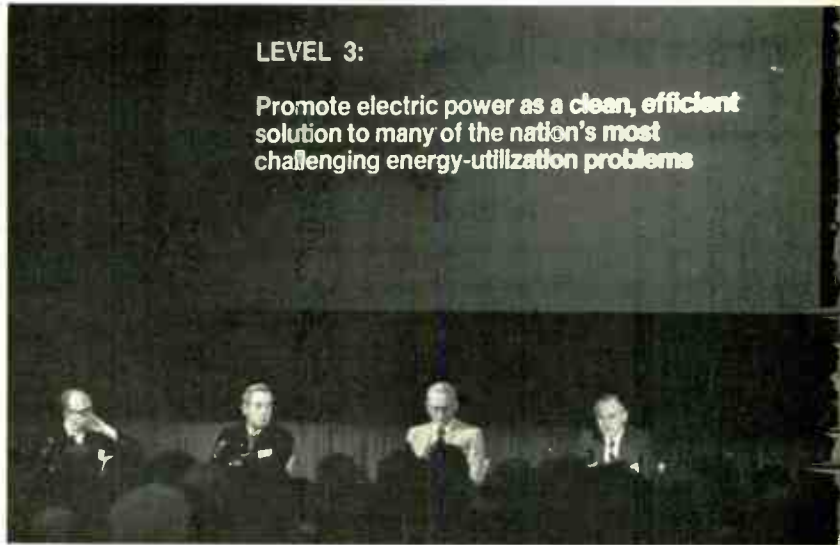
- **Coal gasification.** Coal remains plentiful—"This country has estimated coal reserves and resources of over three trillion tons—enough to last for several centuries to come." But use of much of this bounty encounters environmental objections. "We in General Electric can have a major technological impact," Dance said, "by stimulating the development of a gasification system that will allow the use of these enormous coal resources cleanly in high-efficiency power generation plants."

- **The light water nuclear reactor,** which the Vice Chairman described as "by any measure the best answer to the nation's growing power needs in the years immediately ahead." As nuclear reactors assume more of the base load, he pointed out, the strain on fossil fuel supplies will be eased. "For the rest of this century at least," he concluded, "the light water reactor will be the basic building block to eventual self-sufficiency in energy resources."

**This favorable turn** in the pros-

### LEVEL 3:

**Promote electric power as a clean, efficient solution to many of the nation's most challenging energy-utilization problems**



For GE's 374 top managers, assembled for the 1974 Management Conference, talk of energy became a pre-emptive theme.





pects for nuclear energy ran through much of the discussion at Belleair.

Douglas S. Moore, VP-Corporate Public Relations, pointed up the more positive public outlook toward nuclear energy. A new opinion poll, he said, probed specifically into the public reactions to the energy crisis. One highlight: "In a list of alternatives to help solve the problem of increasingly severe shortages of electricity, by far the most popular solution—cited by 66% of those questioned—was to allow more nuclear plants to be built more quickly."

Another interesting result of the survey: "the public is reluctant to trade off environmental protection to solve energy problems. Some 62% opposed allowing utilities to use high-sulphur oil and coal. And on the question of gasoline shortages, 43% opposed doing away with pollution controls on small cars."

So, clearly, nuclear is the big gainer.

Dr. Thomas O. Paine, Senior VP, was cited for the most colorful expression of this upturn in nuclear fortunes: "The Arab oil embargo may be the 'Sputnik' that launched nuclear power as the preferred source of energy."

**He set new goals** for nuclear energy: "We must accelerate nuclear generation by sweeping aside the barriers to its rapid introduction. We must mount an all-out effort to generate as much as possible of the world's base load from nuclear energy by 1984. A challenging U.S. goal would be to replace the equivalent of two million barrels of oil per day, or 60% of the oil and gas now projected for future electrical generation, by building an additional fifty nuclear plants beyond those planned."

As a straw in the wind, he noted: "France has announced that all its future new base load plants will be nuclear, and

other nations will follow suit."

Paine effectively re-stated the opportunity for General Electric: "Clearly the United States—and the world—is embarking on a new period of technological change in which electrification will get a new look for its potential as a clean, flexible, economical solution to the world's energy problems. And clearly General Electric's primary corporate strategy of the next decade must be to play the leading role in the major national efforts in the U.S. and overseas to find new technical solutions to the economic and geopolitical problems posed by over-dependency on Middle East oil. These new government initiatives are right in GE's heartland: we must maintain and extend our leadership."

It remained for Reg Jones to sum up: "No single company in the world is better prepared than General Electric to lead in the development of this extraordinary opportunity."

### **Energy: the challenge in-house**

But if the energy crunch spells long-term opportunity, the more immediate side of the coin is the in-house challenge to minimize the disruptions in GE service to customers and to GE jobs by conserving the available supplies of energy.

The evidence is in on the first response by GE people. Speaking at the 1974 Management Conference, Senior Vice President Hershner Cross, chairman of the Companywide Energy Utilization and Conservation Program, informed the conferees—and through them all GE employees: "We originally set our corporate energy conservation goal at 10% savings to cooperate with government targets for industry. From early indications, you have been beating our target so handily that we have now decided to raise our sights on a

Company basis to 15% and I would like to ask your support in adopting this as our new overall corporate goal."

How is it being done? Much of the effort falls into predictable patterns—lowered thermostats, lighting turned off where it isn't essential, GE plant signs dimmed, people teaming up in car pools.

**But it wouldn't be GE** if these obvious conservation methods weren't supplemented by resourceful changes:

Examples, at the plant level, were reported at Belleair by Robert W. Lewis, Vice President—Corporate Facilities Services:

- Evendale has re-evaluated jet engine test procedures to reduce jet fuel without jeopardizing quality. The expectation is to lower use by three million gallons, or 15%, annually.

- Pittsfield insulated or re-insulated about eight miles of steam pipe—saving the equivalent of 50,000 barrels of oil per year.

- Fort Wayne increased the efficiency of its steam boilers to 8.2 pounds of steam per pound of coal burned, compared to the former 6.3 pounds. Coal usage was cut by more than a quarter.

- Schenectady used GE Lucalox lighting—the most efficient source of white light available—to relight two industrial bays, saving over 1.7 million kilowatt-hours annually.

Other examples:

- At San Jose and other plants, computer time has been assigned to help line up car pools.

- In Utica, car pools are getting preferred parking spots.

- At Nela Park, volunteers walk through the plant each Sunday, when all is quiet and energy leaks are more easily detected.

- In Pittsfield, scrap wood for fireplaces was offered—and was snapped up in minutes after a Saturday pick-up time.

- And at the Company's New

*(continued on next page.)*

## ENERGY (continued)

York headquarters, cleaning ladies have been enlisted to leave written reminders for forgetful GE'ers who leave on lights or other energy users.

At GE, improvements such as these have to be pulled out of operations that have already been scoured for years by specialists looking for energy savings. In fact, as Hersh Cross reported, GE has had an active waste avoidance program since 1963 under Henry E. Heddesheimer, manager of Plant Engineering for the Real Estate and Construction Operation. An important objective now is to intensify these programs at all 240 domestic GE plants.

Equal care is being taken by GE people in the areas of fuel procurement and management, Leonard C. Maier, Jr., VP-Corporate Consulting Services, emphasized in his Belleair address. With the Vice Presidents of Regional Relations leading the way, good relationships with suppliers, careful checking of allocation quotas, intra-Company fuel transfers are all techniques being used successfully, Maier reported. As the result of those efforts, he expressed confidence that "fuel availability, at least in the short term, will not seriously limit our ability to preserve jobs and serve customers."

### Energy as challenge: the economic outlook

Even though economics, long tagged as the "dismal science," has been made still more dismal by the cascading impact of the energy squeeze, a *Monogram* reporter couldn't get GE Economist Frank P. Murphy around to the darker aspects of the economic outlook until Murphy had pointed out some positive factors:

"We will end up eight or ten years from now stronger economically than we would have been without the crisis," he says.

"Much of the waste and lack of efficiency going on across the economy in general will be cut away."

**Society has been living on cheap energy**—particularly cheap oil, Murphy believes, with the result that demand has ballooned unnecessarily. "The new realism in energy usage will encourage the use of more enduring energy sources, such as nuclear power and other kinds of technology the Company has a stake in."

Moreover, Murphy sees advantages in the present timing of the crunch. "The shortage has given us a six- or seven-year lead on development of alternate sources over what was expected," he says. "We anticipated a crisis later in the decade.



Prescribed by Frank Murphy: a psychology of confidence.

Had it waited, the problems would have been magnified. By then the U.S. would have been living on imports for over 25% of its energy requirements instead of 6%, according to our projections."

The less sanguine aspect of the fuel shortage comes in its more immediate impact on the economy. "We are out with a revised, post-embargo version of our Quarterly Review of Economic Prospects (MAPCAST)," says Murphy, "acknowledging that the embargo has dimmed economic prospects for at least the first half of 1974. Even assuming that oil imports will return to pre-embargo levels by

July, we foresee the real Gross National Product rising by only 1% in 1974 versus the 2.2% gain earlier anticipated."

For those put out of work or otherwise hurt by this energy shortage, Murphy sounds a positive note: the psychology of this slowdown should be one of confidence, he asserts. "This is unlike the usual recession brought about by weakened demand for goods or services or by overheating of the economy. The present problem is largely one of short supply. For this reason, as soon as energy supply problems are met, economic growth should resume with great strength. The demand is still there."

In the meantime, Murphy sees the impact on GE operations as highly selective. Operations serving residential construction markets, for example, will be hurt. Housing starts will be off 24% from an already declining market in 1973, he predicts, adding: "On the other hand, the reduced mobility of people means a good market in 1974 for operations serving home improvement and home entertainment needs. Furthermore, plant and equipment spending will be very strong in 1974 as the energy industry and basic industries such as steels, cement and paper expand capacity."

**Long-term**, Frank Murphy singles out electric utilities, for special concern. "GE people need to help the public understand," he says, "that for these companies to expand at the unprecedented rates called for by the turn to an electrical economy will require enormous amounts of capital. Yet utilities are having trouble raising the money to expand because their rate increase requests are often refused or delayed and, as a consequence, they have difficulty floating their bonds in the open market. Plainly, the utilities need help in

pressing their case for better income margins."

## Energy: the Washington perspective

L. Berkley Davis, Vice President—Washington Relations, affirms that the highest Government priority at this point in 1974 is hammering out a long-term energy policy. "The basic fact is," says Davis, "that the allocation plans and proposed rationing plans are day-to-day responses to the fuels shortage. They don't yet amount to a firm national energy policy. As an indicator of the emergency nature of this effort to date, the Federal Energy Office under William Simon has been doing a yeoman's job, but it exists only by Executive Order of the President and has no permanent status or funding."

U.S. energy policy should provide a coherent set of guidelines to the future, originated by the President and passed as legislation by the Congress, Davis believes. The *Monogram* asked where we stand on having that kind of policy?

"There was legislation before both houses of Congress prior to Christmas," he says, "but the legislation didn't get passed—primarily because the Congress tried to burden it with a lot of extra items. The House has a 'germaneness rule' that says you can't attach any amendment that isn't germane to the principal subject in the bill. But the Senate has no such rule. Consequently, the energy legislation became what is called a 'Christmas tree bill,' with so many extraneous ornaments that no resolution of them could be reached by House-Senate conferees before Congress adjourned."

Davis believes, however, that the bill was a positive step toward a coherent energy policy and that some equivalent of it

will eventually be passed. "One constructive part of the bill," he says, "was the formation of an overall national resources agency to administer the bits and pieces of responsibility scattered throughout the scores of agencies that now have a role in energy. This would focus management depth and concentrated attention on energy resources in a way that would probably have positive consequences. For one thing, a national resources agency might have had the ability to anticipate this crisis and generate action to meet it much earlier than is now the case."

A second item in the proposed energy bill was of specific interest to Transportation Division people in Erie. "There was an amendment put into the bill



Priority for Berkley Davis: a coherent U.S. energy policy.

over in the House," reports Davis, "that requires all railroads to study electrification, recognizing that you can use coal or nuclear energy to create electricity to run a railroad with greater efficiencies in energy usage than is possible with oil-burning locomotives. That provision will probably stick in the final bill. When this energy policy bill finally gets through, as it has to, we also predict there will be a definite swing toward the use of coal."

From his Washington vantage point Davis is particularly bullish on the expediting of nuclear power plant construction as a result of the energy short-

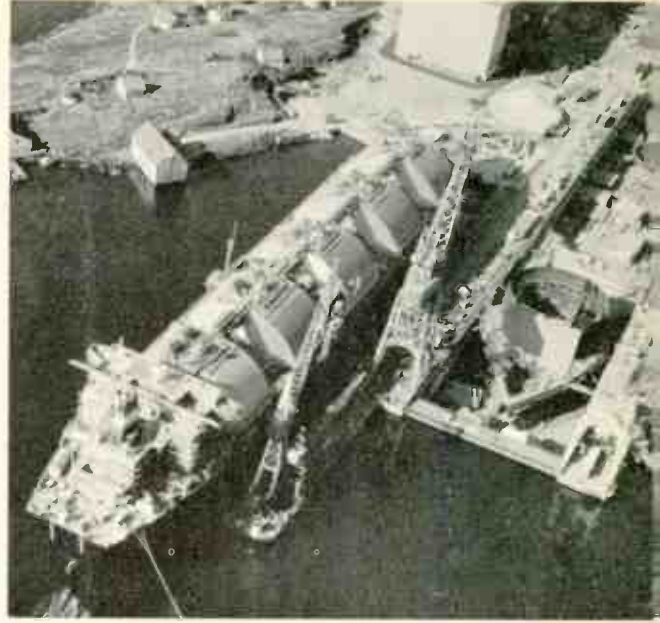
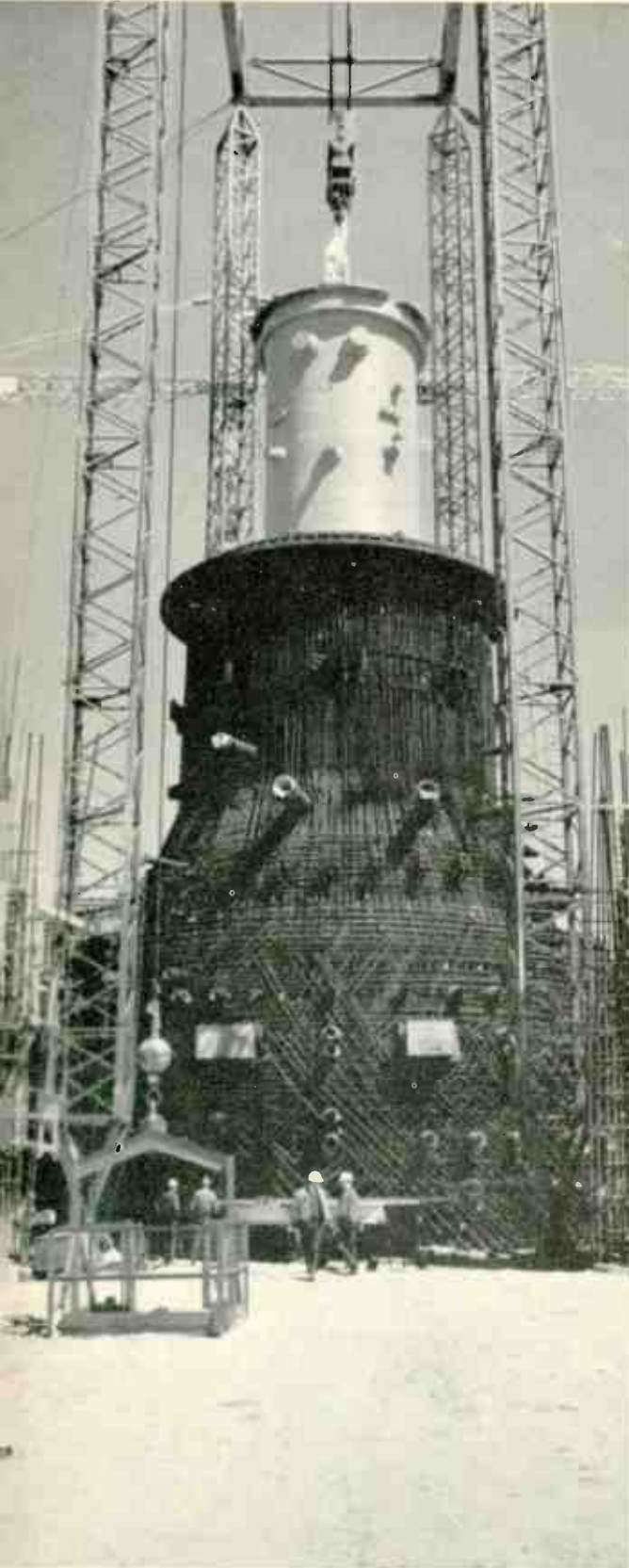
age: "I'm of the opinion," he says, "that public acceptance of nuclear power has been stronger all along than one may have gathered from press reports. The worldwide dramatization of oil and gas shortages will strengthen interest in, and approval of, nuclear-fueled generation."

One positive result is a renewed effort, Davis reports, to reduce the time cycle in bringing nuclear plants on line. "There is a definite attempt by the AEC and the administrative branch of government, as well as discussion in Congress, centering on cutting the time interval between design and start-up of nuclear plants to four or five years, compared with the eight or nine years it takes now. The major change here would be to reduce some of the present delays in licensing procedures. So here, too, nuclear energy should benefit."

Another legislative possibility down the road in '74 is the proposed requirement to label appliances to show their energy consumption. "Air conditioners are already labelled as to their energy efficiencies and the Department of Commerce is looking into the idea of labeling other appliances. In a sense, the nameplates already show their wattage, but this new requirement would make these facts much more prominent. A point that tends to get overlooked here, we in GE feel, is how small a percentage of energy actually goes into electrical consumer products. Residential lighting, for example, amounts to only .7% of total U.S. energy usage, and no individual appliance, large or small, accounts for over 1% of the total. All residential uses of electricity other than for space heating require only 8.2% of the total energy consumed. Also, we point out the Company's emphasis on improving the efficiencies of its products."

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GE technologies thrust into new prominence by the energy squeeze: nuclear plants—66% of the public now wants to see more of them built more quickly; LNG ship, first of a new breed powered by GE turbines; oil-drilling rig, utilizing GE electric drive.



In fact, a prominent part of the activities of Vice President Davis and his staff at present goes toward trying to maintain a reasonable perspective on energy questions. "Everyone concerned with energy is in an emergency mood and likely to rush off in directions that aren't based on solid facts," he comments. "So one of our jobs is to be ready with the facts when we're called for them—to have them available or to get them, fast."

### **Energy as opportunity: a rush of new orders**

News of the Mideast oil embargo was quickly followed, at General Electric, by a series of record-breaking orders for GE's power generation and nuclear operations. The timing was more than coincidental. While energy has become top-of-the-front-page news only recently, projections of the coming energy squeeze have been around for months, even years, heightening the urgency for utility customers to prepare themselves with coal-fueled and nuclear alternatives to other energy sources.

As a consequence, the new orders offer a preview of the larger future opened up for electric power:

- The Nuclear Energy Division and its overseas affiliates finished 1973 with the largest single transaction in the history of the nuclear industry in terms of generating capacity. Electricité de France, the French state utility, ordered two boiling water reactors with options for six more. Total cost of the project could reach \$747 million.

- Another industry record-breaker came to Steam Turbine-Generator Products Division when Duke Power Company awarded it an order for six large steam turbine-generators. The award, at more than \$250 million, set an industry record for a single order.

- Almost as large was an order from a five-utility group in the Midwest, formed for joint development of six nuclear power plants. The order, valued at nearly \$250 million, was for six large steam turbine-generators, to provide new generating capacity for Union Electric, Kansas City Power and Light, Kansas City Gas and Electric, Northern States Power and Rochester Gas and Electric.

- Other substantial nuclear orders have raised to 114 the total of GE-designed nuclear plants on order, under construction or operational in 12 countries. The recent orders include Public Service Company of Oklahoma's selection of two 950-megawatt GE boiling water reactors for that state's first nuclear powered generating station; choice of a BWR/6 system for a second nuclear unit at the Zimmer power station serving three Ohio utilities (Cincinnati Gas and Electric, Columbus and Southern Ohio Electric and Dayton Power and Light); the government of Mexico's repeat order for a second GE reactor at its Laguna Verde nuclear plant; a 1200-megawatt GE boiling water reactor for Puget Sound Power and Light, with the option to purchase a second unit; and two more 1.2 million kilowatt BWR's for Alabama Power Company.

**Changes in energy sources** mean new business for other GE operations. Important examples stem from liquefied natural gas (LNG) technology.

Twenty GE gas turbines have been ordered by the Algerian national oil company for LNG compressor stations on a 310-mile pipeline in Algeria.

Transport of the liquefied gas requires a new kind of ship, and a new opportunity for GE marine propulsion units. The first GE-powered LNG carrier has been plying the Atlantic since Decem-

ber, bringing imports of gas to the U.S. East Coast.

GE technologies also have key roles in efforts to tap new sources of oil. A strong new surge of interest in the Company's electric drive systems for oil well drilling is reported by the Industrial Sales Division. More than 250 of these GE systems are in service. A new oil exploration ship outfitted with the GE systems is scheduled for March completion in Scotland.

Again, GE gas turbines are driving giant pumps for an unusual new oil storage facility under the North Sea. The facility is an "island" made up of submerged tanks with the capacity to store a million barrels of oil from the Ekofisk oil field.

The energy squeeze is having its effects on GE products as seemingly remote as mobile radio. GE's Lynchburg, Va. plant, for example, reports a brisk new interest in mobile units that will provide better coordination—and thus fewer travel miles—for large transport fleets.

### **Energy: three tiers of response**

In establishing GE's Energy Conservation Council last November, Hersh Cross specified three distinct levels of interest for GE people:

- The efficient use of energy in our plants and manufacturing processes;

- Providing products and services which offer the customer opportunities to conserve energy; and

- Promotion of electric power as potentially the most efficient form of clean energy.

Events since then confirm that continued vigorous action on all three of these tiers of response can make 1974 a decisive year in assuring that the energy future will, in fact, become increasingly electrical. ■

## Ralph J. Cordiner: a leader passes



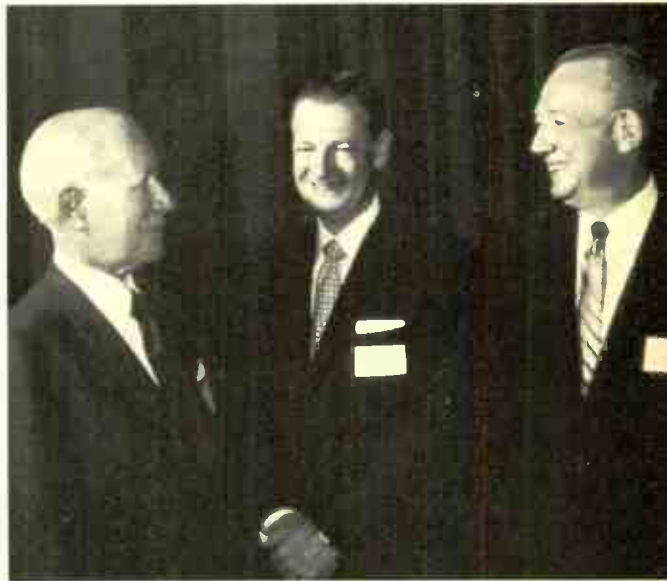
Ralph J. Cordiner, the Company's Chief Executive Officer from 1950 until 1963 and the architect of its famed decentralized management philosophy, died on December 5th in Clearwater, Florida.

Mr. Cordiner, an energetic executive once called a "human powerhouse" by *Time* magazine, left his mark on the General Electric Company in a way few men have. In the process he became one of the best known men in American industry. It was in December of 1950, within a few days of taking office as GE President after Charles E. Wilson returned to Washington to head the Office of Defense Mobilization, that Cordiner outlined his plan to decentralize the

Company's management. Years later he was quoted as saying: "Civilization is moved forward by restless people, not those who are satisfied by things as they are."

Born in Walla Walla, Washington on March 20, 1900, he graduated from Whitman College in 1922 and joined the Edison General Appliance Company, a GE affiliate. In 1932 he came east to head the Heating Device Division, working for "Electric Charlie" Wilson. Eight years after he was made President and Chief Executive Officer in 1950, the GE Board of Directors also elected him Chairman of the Board. In 1963 he retired to Dundee Ranch, his 2500 acres of cattle and citrus groves in Florida.






His longtime friend Fred J. Borch told those gathered at Stamford, Connecticut's First Presbyterian Church to honor him:

"We all shared a rare privilege, the privilege of having experienced true leadership. For Ralph, I think, was born to lead. It was instinctive to him from the days, which he later in life fondly recalled, when he occupied the driver's seat in a 33-horse combine on his father's wheat farm in Walla-Walla, Washington, to the years when he graced with great distinction the chairs of the Chief Executiveship and Chairman of the Board at General Electric.

"He had the impatience of a man who demanded a great deal of himself, and expected a

great deal of others. But to those of us who knew him, he was also a warm, and generous, and very human friend, who gave us by his own indomitable courage a lesson in courage when the going got toughest.

"No one, not even his family, nor his closest friends, can probably ever fully realize the agonies and joys that he experienced. For he met praise and criticism alike, with quiet dignity and a stubborn Scot's pride.

"But his achievements are permanently recorded, in biographies, and textbooks on management around the world, and in the growth and development of the General Electric Company and its people." 

# MONOGRAPHS

## 1973 preliminary results: "a fine performance"

Meeting with the press January 24 in New York, Chairman Reginald H. Jones gave the first peek at General Electric's 1973 results. Preliminary, unaudited figures add up to what he called "a fine performance": sales were up 13% to about \$11.6 billion. Earnings rose 10% to \$585 million, or \$3.21 per share.

Looking to 1974, the Chairman cautioned reporters against over-optimism on first-quarter results and cited "the larger-than-usual number of variables that may affect the economy for the coming year." He foresees a first-half slowdown in consumer-oriented businesses. "How much of an offset we can expect from what appears to be a still healthy industrial sector remains to be seen." With these caveats expressed, he added: "I would be less than candid, however, if I didn't tell you it gives a Chief Executive some confidence to face into a new year with an orders backlog in excess of \$14 billion, up some 25% from that at the end of the prior year."

All in all, he said, "1973 was a year of achievement for General Electric." And despite the many imponderables in the outlook he gave four reasons why "we feel bullish about the future": the new emphasis on energy technologies that are "General Electric's strong suit"; the continued investment boom in capital goods and



GE's upcoming 1973 Annual Report: it will have good news for share owners.

services for industry; GE's international growth; and the greater leverage provided GE by its strategic planning system.

"With this approach," he concluded, "we believe that General Electric will be able to achieve a goal of sustained earnings growth at a rate faster than the national economy."



A GE physician, Dr. Thomas R. Casey, Associate Medical Director—Corporate Medical Operation (May-June 1972 *Monogram*), has seen his professional athlete's past come back to honor him. He and other former pro football

players were recently presented with a plaque commemorating their election to the Canadian Football Hall of Fame at a formal induction ceremony in Hamilton, Ontario.

Dr. Casey played pro football first with the old New York Yankees, then with Canada's Hamilton Wildcats in 1949 and the Winnipeg Blue Bombers from 1950-1955. With the Blue Bombers, Dr. Casey earned All-Star ratings and honors that included being named Winnipeg's Citizen of the Year in 1956.

GE Theater's next presentation appearing on the CBS Television Network is "It's Good to Be Alive," a special two-hour teleplay focusing on Roy Campanella, the former Brooklyn Dodger catcher whose brilliant baseball career was ended by an auto accident in 1958. The telecast is Friday, February 22 from 9:00 to 11:00 p.m. Eastern Daylight Time.



**Taming the paper dragon:** A different kind of conservation campaign—paperwork conservation—is underway at International Sales Division. The Division is a leader in helping to reduce the eight billion dollars it costs the USA each year just to do the official paperwork required for US imports and exports.

That's seven and a half percent of the value of all the goods shipped in and out of the US, an inefficiency by anyone's standards.

Hoyt P. Steele, the Division's Vice President and general manager, is on the Board of Directors of an industry-wide cooperative organization working to solve the problem. The National Committee on International Trade Documentation has concentrated its activities on specific projects to reduce, standardize and computerize the average of 46 documents involved in each export shipment that eat up a billion man-hours annually.

NCITD has already achieved significant breakthroughs—it is estimated that if all of NCITD's recommended actions were carried out, the number of specific types of documents would be reduced by more than 60%. This would amount to a saving in paperwork costs of at least 45%—an estimated \$3.6 billion a year.

One of International Sales Division's documentation experts working with the NCITD is George Begnal. He helped develop an integrated computerized order processing and export documentation system which is recognized by government and industry leaders as one of the most advanced in the world.

Begnal and his associates recognized in the late 1960's that the major solution to GE's paperwork problem had to come from a cooperative effort among the governments, carriers,

banks, freight forwarders, insurance underwriters, trade associations and manufacturers. NCITD was formed in June of 1967 as a non-profit organization, with Hoyt Steele a charter member of the board.

The paperwork burden is particularly heavy on companies such as General Electric, says Begnal. First, more paperwork is required of exporters than importers. And second, many of GE's exports are complex, multi-product shipments requiring heavier than average documentation. With the constantly increasing volume of GE's sales going to off-shore markets, Begnal and his associates at the International Sales Division have an important mission in trying to whack the paperwork monster down to size. Below: Begnal holds the 45 different forms required for an average U.S. export.



**Giaever meets the King:** Corporate Research and Development physicist Dr. Ivar Giaever was in Stockholm on December 10 to accept his 1973 Nobel Prize in physics (November-December *Monogram*). This was the scene as Giaever, left, accepted the coveted prize from King Carl XVI Gustaf of Sweden.

Dr. Giaever shared the physics award with Dr. Leo Esaki of IBM and Dr. Brian D. Josephson of the University of Cambridge, England. The trio won the Nobel Prize for their separate contributions to the study of electron tunneling in semiconductors and superconductors. ☐

# GE'S WEEKEND ARTISTS—or, staying home and liking it



*"I'm not a competitive painter," admits Constantine J. Balisado. "I like art for my personal self-gratification and because it helps me to express feelings which couldn't be put down on paper."*

*Connie is a Design Illustrator for the Heavy Military Electronic Systems Products Department in Syracuse, N.Y. He likes to try different mediums and materials, but prefers impressionistic and abstract styles most.*



*Recuperating in a hospital from a WW II wound, Gene Kaskin started painting as therapy. Now he is an Equipment Designer for the Television Component Products Department in Syracuse, N.Y.*

*Gene has produced a thousand paintings since he began, including several different series. The watercolor painting in his hand is from the "Disappearing Syracuse" landmark series which is on display at the Syracuse Canal Museum.*



No gasoline for Sunday driving? Take up art—painting, sculpting or other forms of visual creativity.

That's the answer for a surprising number of GE people. The *Monogram* says "surprising" because the response to a query about Sunday artists so inundated us with examples that we have an embarrassment of riches. Out of the many excellent pieces of work submitted, space allows us to highlight only a sampling. To those GE art enthusiasts not shown on these pages, our regrets.

Why choose painting as a creative outlet? Each artist has his own personal reasons. "Although I had no formal art training other than one year in grade school," explains Emily Browne who is employed by the Battery Products Section in Gainesville, Florida, "being an artist was my childhood ambition. But when I realized I couldn't be another daVinci, I decided to maintain my interest in it as a hobby."

While most of the artists admit that painting is for their personal satisfaction, Ned Herrmann, Manager of Management Education in Crotonville, N.Y., offers another perspective: "My strongest desire and greatest pleasure," he says, "is to create 'personal art.' I find that one of the best ways of showing someone I care is to paint a picture that has special meaning and significance to this particular person."

Some GE artists see their avocation as requiring all of the skill, patience and awareness they have at their command. "Doing a serious painting is no way to relax," explains Dr. Joseph Marquisee of Cleveland's Lamp Business Division. "There is plenty of agony before the work is finished, but the satisfaction of accomplishment when it's over makes it all worth the effort."

Who can learn to paint? Everyone and anyone, the GE artists believe. "Just because someone feels he can't draw a straight line doesn't mean he has no talent," says Technical Illustrator Tim Schlie.





A desire to paint that dates back to when he was a youngster has led Ralph Satterthwaite to his current GE position as Illustrator in the Re-Entry and Environmental Systems Division in Philadelphia. His off-hours' paintings have been shown at the Smithsonian Institution and at the Philadelphia Academy of Fine Arts, where he was selected as the outstanding artist of an "Afro Philadelphia" exhibit three years ago.

"One reason I enjoy painting so much," he explains, "is that I don't allow myself to be confined—I use different mediums, different size canvases and different techniques."

One painting Ralph has done is a portrait of Martin Luther King which is now displayed in print form in many Philadelphia high schools. "Cocoa on a Flute," left, was painted in acrylics from a live model.



In corporate life, W. E. Herrmann is Manager of Management Education and works at the Management Development Institute in Crotonville, New York. In private life, he is a very active professional artist in the Stamford, Vt. and Westchester, N.Y. areas. Ned has experimented with most mediums of painting but has developed an interest and appreciation for "gouache," a type of opaque watercolor. His red barn scene, above, was done in oil.

Although some of his paintings are done on location, especially in Vermont, the great majority are painted in a private studio adjoining his residence. From over 250 paintings, he has competed successfully in juried shows and has paintings in over 150 private and corporate collections.

Ned is also an active sculptor and, in recent years, has combined his painting and sculpture with music and photography into a "multimedia" approach to art.

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ARTISTS (continued)



Emily Browne, a Data Processing Specialist, prefers to work in oils and is currently experimenting with a palette knife. Her paintings are all realistic—people and nature are her favorite themes. "Riverside" above is a 2' x 5'-size painting in oil.



Emily believes that painting is a relaxing and fulfilling enhancement to life and can be enjoyed by everyone: "So many people would have a marvelous time painting if they only had some confidence in themselves. What one must realize is that objects don't have to be exactly as you see them—they can be changed according to one's feelings and attitude toward them. Essentially, what makes art so creative is that individual touch."



Portraits and figure studies are the specialty of Faye Burnett, a Technical Illustrator for the Telecommunications Products Department in Lynchburg, Virginia. Working primarily with oils, acrylics and watercolors, Faye has exhibited her "at-home" works in dozens of art shows and has received many awards including a Best in Show and Most Popular vote. In February of this year, she is scheduled to hold her first major one-man show at the Dupont Gallery, Washington and Lee University in Virginia.

Faye paints "for my own enjoyment in a traditional manner in an untraditional time." Although she has had fun in art for some 30 years, she has become seriously involved with it as a hobby for only the past five years. Her painting "Donna Maria" above is a portrait of a contestant in a beauty pageant.



The nearly life-size tempera painting below took Dr. Joseph Marquisee, a Research Chemist in Lamp Division's Chemical Products Section, five months of full-time effort to complete. A self-taught artist, Dr. Marquisee also sculpts and works with stained glass.

"Each painting presents a new challenge and teaches me something new about my craft," he says. "I try to capture those aspects of my world which are important to me."







A combination of felt tip pen and watercolor were used by Timothy Schlie to create the above drawing designed to illustrate a song. Twenty-five year old Tim, a Technical Illustrator in Fort Wayne's Graphics Reproduction Section, has displayed and sold some of his prints at the Fort Wayne Art Institute's annual auction, the Tri-Kappa art show and local art exhibits. In addition, he has designed and produced promotional materials for the local Fine Arts Foundation.



"One reason I find art so stimulating," Tim explains, "is that it's a way of first releasing my emotions and then sharing them with others."



"Painting can be a very painful experience at times," admits Bret Eddy, a Senior Editor for the Order Processing Section of FASO in Southfield, Michigan. "If you have an urge to create something and it doesn't quite come out right, it becomes very frustrating." Nevertheless Bret has continued his childhood hobby for about 45 years. He's been with General Electric for 40.

Bret has gone through stages of realism to surrealism and, currently, to abstract expressionism. Many of his paintings have been accepted for artist shows, including one-man shows, have won awards and have been in juried shows. He maintains an exhibit of about 70 paintings in his GE sales office. Bret is making plans now to paint a series of theaters and movie palaces, working from actual sight and photographs. Shown below: "Untitled 73."



A scientist with GE's Corporate Research and Development Center, Dr. Fred F. Holub painted his abstract "Western" (left) in oil.

"I usually paint in abstract," says Dr. Holub. "It has a lot of freedom and allows me to find and create new art forms."

Dr. Holub, a 17-year GE veteran, prefers to use large canvases because they "allow a lot of room for expression." Many of his paintings have been shown in local art centers. ■





## Return to Russia

After half a century, GE's Toli Gurewitsch revisits the scenes of his boyhood

Russian-born GE R&D Center liaison specialist Anatole Gurewitsch took his camera with him on recent GE trips to the USSR. Scenes he recorded, below, include: the Petrodvorets canal and fountains at the main entrance to Summer Palace of Peter the Great on the Gulf of Finland near Leningrad; inside the Kremlin walls, Moscow; interior of St. Sophia Cathedral, Kiev; and Leningrad rostral column showing prows of ships captured from enemies.





Anatole M. Gurewitsch was born in Russia but left his native land with his mother and brother before he was ten years old. Of that leaving he now says: "I was too young to have an active part in the decision, but old enough that I've never forgotten my mother tongue or the places and scenes of Russian life."

After a time of family struggle in Europe, a time in which he secured an education in Berlin and Zurich, Toli Gurewitsch came to the U.S. in 1936 and shortly afterwards joined General Electric as a research associate in what is now Corporate Research and Development. "I settled in to stay 'forever'; I still consider Schenectady my home town." Two decades of productive engineering followed—Toli has authored 39 issued patents.

His work for the Research Laboratory led, in 1956, to a return to Europe: he accepted a short-term assignment doing scientific and technical liaison for the Laboratory and set up an office in Zurich. Having received his PhD. in physics, he established himself as Dr. Anatole Gurewitsch, Consultant—Applied Science and Technology—Europe, for the Research and Development Center. Here his broad technical background, plus command of several European languages, provided real access to European technology.

**The short-term assignment** has already stretched to 17 years. For much of that time his extensive travels in Europe had one exception: he did not go into Eastern Europe.

Then in 1972, with the warming of relations between the U.S. and the USSR, GE had an additional need for Toli Gurewitsch: to apply his command of the Russian language and his knowledge of GE's technical strengths and needs to the aid of GE sales missions to Moscow. He says:

"GE and many other U.S. companies were aware that our allies in Europe and the Far East were busily building trade with the USSR—trade from which U.S. companies were excluded by Government policies. When these policies began to change, we naturally wanted to begin exploring the trade possibilities. I could help our people cross the language barrier."

At the invitation of Donald MacInnes, Manager of the International and Canadian Group's Eastern European Operation, Gurewitsch flew to Moscow. Landing there was a nervous moment: "I wondered what sort of a reception a Russian-born American would receive. I knew that Russians are very sensitive to accents and can distinguish a person who has learned Russian in school from a native after a phrase or two. There would be

no use trying to disguise my origins. I would have to answer the inevitable questions and see what would happen."

The first thing that happened was a poignant inward rush of impressions that revived the past. "When the artist Marc Chagall told about his return to Russia after an absence as long as mine, he assured reporters that Russian meadow flowers are the most fragrant in the entire world. I don't know about that, but I do know about the birch trees. I had no sooner landed in Moscow than I became excited at seeing those beautiful birches, growing more abundantly than I have ever seen them grow in any other country. To be surrounded by the birches I had seen as a boy convinced me I really was on Russian soil again."

**He soon got the answer** to the kind of reception he could expect: "I was cordially received, both during technical discussions and at social gatherings. There was a great curiosity about my native accent. I tried different answers, including a capsule autobiography. The most satisfactory reply was 'My mother came from Russia.' It was correct, credible and quick."

Meanwhile there was business to be done. "The main objective of this first trip was a presentation at the USSR Ministry of Electrical Engineering, covering a couple of GE technical developments that were available for licensing. But we extended the visit to include the Ministry of Heavy Electrical Industry, the Ministry of Science and Technology, Licensintorg (handling foreign licensing procedures) and a new organization called Vneshtekhnika whose concerns include establishing cooperative development activities between the USSR and foreign organizations. My Russian received a

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Boat trip on the Volga brings together General Electric and Soviet experts in technical discussions of electrical technology.

## RETURN TO RUSSIA (continued)

vigorous workout.”

Since that first GE trip, Gurewitsch has been back six times, with other trips pending.

“The trip this past June was particularly interesting. It was on the subject of high-voltage-DC transmission. The group was headed by Thomas H. Lee, manager of the Technical Resources Operation for the Power Delivery Group. The super-packed week-long trip included a visit to Volgograd (formerly Stalin-grad) for technical discussions and a tour of the world’s third largest hydraulic power station. We had a memorable luncheon on a boat in the Volga River. There was also a brief stay in Tallin, capital of the Estonian Republic of the USSR, for a tour of a power semiconductor factory. It was both exhilarating and exhausting, but a base was laid for what could become realistic commercial agreements.”

**What are his overall reactions to present-day Russia?** “Of course I’m aware of the much-discussed political reasons for the Soviets’ willingness to enter into a period of détente with the U.S.—the threat of Red China, the need to match the more friendly attitudes being shown by the Chinese, and so on. But in my talks with technical peo-

ple there I seemed to find another interest—that is, an awareness that many of the problems confronting us today are too big for countries to tackle on an uncoordinated basis. Space exploration is too costly—a pooling of efforts is much more sensible. Keeping the oceans clean, advancing health care, settling questions of ocean fishing, solving the energy crisis—these are world problems, and the Russian technical people I talked with seemed sincerely eager to pursue them on a cooperative basis.”

He adds: “The USSR has much to export in resources that we need, and they have advanced experience in certain technologies that are of interest to us. For example, because of the geography of the Soviet Union, they have built some very high capacity hydro-generators. They have also done advanced research in solar power and in certain aspects of superconductivity, in which we are interested. They, in turn, are interested in some of our commercial and industrial products.”

Gurewitsch is intrigued by the strength of the drive toward enlarging the consumer sector of the economy: “In their personal lives the Russians are moving rapidly into a consumer era. The

most obvious signs of change are high-rise apartments, TV aerials and even a gradual increase in personal cars. A new Polaroid camera I had with me caused great flurries of interest and excitement—I felt like a magician. You see advertisements for life insurance. I see these as hopeful developments, sources of commonality of interest with the West. A strong trend toward consumerism would be hard to diminish or divert.”

One aspect of the Russians’ acceptance of Western ways was personally disquieting to Gurewitsch: “I have maintained a strong interest in Russian folk music and have a pretty good collection of recordings of this music, so I was looking forward to evenings in restaurants where someone would be strumming a balalaika and singing the old songs. ‘Forget it,’ I was told in Moscow. ‘All you’ll find is electric guitars, over-amplified rock music and young musicians who look and sound pretty much like their American counterparts! With infrequent exceptions, it was true. I’ve checked out the situation in Moscow, Leningrad, Kiev and Odessa thus far—with discouraging results. I admit that this musical bond among young people is in-



Gurewitsch photos show GE and Russian engineers engaged in discussions at hydro-electric power station in Volgograd and, right, hydrofoil excursion boat on Gulf of Finland near Leningrad.



ternational and a force for mutuality. But it's one area where my sense of nostalgia is too strong to let me adjust."

Many of his encounters with Russian people showed basic good will toward Americans, Gurewitsch says. "If the political climate is right for it," he observes, "at the person-to-person level there's no problem in working together, particularly

when we get into a technical area with strong common interests. Personal friendships and the natural bond between scientists with common technical interests are strong forces which can help keep us in touch as we carefully tackle the very tough problem of creating realistic commercial agreements."

How does Toli Gurewitsch view the future? "The move

toward greater interchange between Eastern Europe and the U.S. is one of the significant changes in our times. To bring any discussion down to a realistic contract, with all the appropriate safeguards, is a really challenging assignment. I believe it can be done, and I am excited, personally and professionally, to be playing a part in it." ❧

## Eastern Europe: the pace quickens

Interest in East-West trade, reached through exploratory efforts as described by Toli Gurewitsch, has been gaining momentum. Recent GE news events indicate the trend.

Rumania's President Ceausescu visited General Electric's Nuclear Energy Division facility at Wilmington, N. C. His tour immediately followed a two-day state visit in the Capital where he met with President Nixon. His interest in visiting the GE facility was expressed at the meeting, and the tour was arranged by the U.S. State Department with Atomic Energy Commission concurrence.



Accompanying President Ceausescu during the plant visit and presenting the memento pictured above was Dr. Thomas O. Paine, GE Senior Vice President of Technology Planning and Development.

A Memorandum of Understanding that will hopefully lead to business opportunities in a number of industrial and electrical product areas was signed by GE representatives and the Socialist Republic of Rumania following President Ceausescu's visit. The agreement was signed by Constantin Stanciu, Deputy Minister of Foreign Trade, on behalf of designated Rumanian economic organizations, and William L. Lurie, Vice President—Strategic Planning, International and Canadian Group, representing General Electric.

GE products were again on display in Sokolniki Park, five minutes from Red Square in Moscow, as the result of accepting a second bid to participate in the USSR's industrial fair.

Attracting particular attention from Russian visitors were GE products serving the oil and gas industry. These included Thermo-o-Case and Thermo-o-Trol pipeline insulation products, offered by GE's Space Division, originally developed to serve the Alaskan North Slope fields at Prudhoe Bay.

GE's gas turbines, produced under a manufacturers associate agreement linking the Gas Turbine Division and Italy's ENI facilities, are already in use in the Soviet Union.



GE's newest foreign office—Moscow, USSR—has its first permanent manager. He is Leonard Zubko, 19-year GE veteran, experienced in international affairs and fluent in the Russian language. He will continue to nurture commercial relationships, that

Donald MacInnes—manager of the Eastern Europe Operation (March-April 1973 *Monogram*), has been exploring and developing within the Soviet Union.

Zubko will be responsible for the start-up of GE's Moscow branch, for the coordination of the Company's activities within the Soviet Union in the areas of power generation, gas turbines and research and development on projects from the electric auto and superconductivity to solar energy and medical systems and equipment.

## RETIREMENT READINESS:

GE's Ken Emery teaches associates to "trade tension for pension"

Life-cycle statistics conclude that the average worker spends one-quarter of his or her life in school, one-half in work and one-quarter in retirement. Helping others make a satisfactory experience of this last cycle, averaging 14 to 17 years, is a special project for C. Kenneth Emery, manager—Media for Advertising and Sales Promotion Operation in Schenectady.

Emery is one of a growing number of "retirement readiness" experts who advocate putting retirement on a carefully planned basis rather than letting it just happen. He takes this philosophy to the lectern two nights each week, leading a course in retirement planning attended by 45 Schenectady area residents—half of them from GE.

He characterizes his course as a do-it-yourself project, with himself serving primarily as a discussion leader. However, he admits that his presence at the head of the class is based on five years of research and thought-taking. He became interested in the project when a fellow employee, retirement bound, feared he wouldn't have sufficient funds to live on once he retired. Emery plunged into financial planning with the associate and ended up proving that the fears were unfounded.



**If this course has a motto**, Emery says, it is "Trade tension for pension." That's the goal. But for many people today it is a tough goal to achieve, because retirement is simply alien to most people who have spent their lives in our work-oriented society.

But by planning ahead, he emphasizes, "retirement from one's job doesn't have to mean retirement from life." Retirement can mean more than just moving to a warmer climate or sitting on the sidelines. "I know it's a cliché to say that retirement should be a beginning rather than an end, but I've been close enough to this subject that by now I can cite examples of how, through planning, people can retire to something rather than just from something."





How soon should one start planning for retirement? No one timetable fits everyone precisely, Emery says. "However, one doesn't get many chances for planning after reaching age 55 or 60. I tell my class that retirement planning should begin no later than age 55."

**What's the first step?** "Realistically" he says, "retirement planning should begin with the pocketbook rather than with the 'inner man.' We can satisfy the inner man only if our physical and monetary needs and wants are reasonably taken care of. My class members begin by taking account of their assets and liabilities, their life insurance, valuable papers and bank accounts. They work out estimates of how much money they will need in comparison with how much they will have."

At age 55, he adds, the retirement planner should consider liquidating fixed, long-term debts and should prepare an inventory of valuable papers and records. Emery also gives his classes the admonition to avoid get-rich-quick schemes—"the individual at this point in life can be very vulnerable to the temptation of one last desperate gamble to improve his financial lot. It's an urge that should be resisted."

After age 60, Emery considers that the time has passed for risking savings to increase capital growth: "From age 60 to 65 start liquidating your non-producing stocks and putting your money into more assured dividend-paying stocks, high-interest bonds and other stable income-producing investments. Consider, for example, the long-term, daily-compounding savings certificates available at savings banks and loan associations."

**Another practical suggestion** for people entering this threshold in life, Emery says, is to begin making a more serious survey of the areas to which one would like to retire. "It makes sense to use vacations for this purpose," he points out. "The prospective retiree shouldn't settle for shuffleboard in the sun unless that really appeals to him. Actually, the individual at retirement has a moment of great freedom—to choose anywhere in the country or in the world that interests him and is within his financial limits. Or, on the other hand, the individual may well wish to continue on right where he has been living."

**And what about the "inner man?"** Here's where wise planning, covering the best use of leisure time, can pay off most handsomely, in Emery's view. "Basically, there are four areas of opportunity—for recreation and social ac-

tivity, education, service and purposeful regular work."

As for recreation, a great deal of advice customarily centers on hobbies, Emery observes. And this may be easily accepted advice for the avid collector, gardener, golfer or fisherman, who's just waiting to pursue these interests with greater fervor. But for others, hobbies don't constitute so valid an answer. "Many retired people aren't finding retirement to be one vast hobbyland. A lot of this advice comes down to trying to convince yourself that if you can turn a piece of wood into a figurine or a lump of clay into a pot everything will be taken care of. It may just not work that way. Many hobbies may seem too trivial to the retired business or professional man. They can be made more meaningful if you can accomplish any or all of the following:

- Make money out of them;
- Become professional enough to draw attention to yourself, to be interviewed by the newspapers or be invited to give lectures;
- Become involved so thoroughly that you are drawn into hobby societies, shows and the various affairs sponsored by the hobby trade."

Emery is high on social activity as an enhancer of retirement. "If you like people, you can make a wide circle of social friends when you retire. With these friends you can arrange activities that your budget can afford. However, a set of social friends doesn't come ready-made—you build it, couple by couple, and it may take a year or so. And you can't make one friendship group and quit—you must be constantly recruiting new people for your circle. But don't confine your choices exclusively to retired people. Look for some couples who are in their fifties who will add an element of permanence to your social life."

**He also has advice about travel.** "Retirement offers not only more time to travel but an opportunity to take advantage of low out-of-season rates. But recognize that travel by automobile may not be the pleasure it once was. All-inclusive packaged tours offer many advantages. They relieve you of details, offer companionship with other members of the tour group and reduce the costs. Whatever you give up in terms of planning your own itinerary may be worth the sacrifice."

Similarly, "going back to school" may do more than fill gaps in your education. "It can enrich your life and lead to the making of new

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friends among people who like to study. Continuing education classes offered by local schools, community colleges and opportunities to 'audit' college courses are most popular with today's retired people."

Emery sees service to others as a highly satisfying answer to the problem of leisure. "This approach to retirement makes particular sense for the vigorous, busy person who enjoys the turmoil of business or professional life. There are many avenues open: community organizations, church work, civic affairs, political activities, welfare work. Don't be afraid to try out a few different kinds of volunteer jobs before you settle on one you like."

**Finally, what about working after retirement?** "Any retiree who takes on another part-time or even full-time job has plenty of company in the U.S. In fact, Americans over 65 as a group get one-third of their income from wages. There are both financial and psychological advantages. That extra bit of wages may mean the difference between just scraping along and enjoying some of life's luxuries. And a job can give a pattern to daily living, as well as status, independence, social contacts and intellectual stimuli."

For many retirees a part-time job may be the best answer. "About one-third of all workers over 65 have part-time jobs. However, a recent GE study concluded that this percentage is considerably lower for GE pensioners," he says. "And these jobs fit into the earning pattern established by Social Security, since you can earn up to \$2100 a year without losing any benefits. Many part-time and seasonable jobs exist in 'service' areas and offer more opportunities to older people than industrial or commercial employment. Also, many retirees make a successful second career as salesmen even though they've never sold a thing. Here one's age can be an asset. In real estate salesmanship, for example, age can count heavily in your favor since people involved in so large a transaction as buying a home tend to put more trust in an individual who is obviously experienced and mature."

Facing retirement himself, Ken Emery has his own plans pretty well set. He'll remain in Schenectady with family and friends and continue assisting others through additional retirement readiness courses. "I see this field as my great opportunity to help others by overcoming their fears of retirement and getting them to accept it as a positive rather than a negative event. I don't have to stretch far at all to apply that perspective to my own plans." ❏

## ORGANIZATION CHANGES

### AEROSPACE BUSINESS GROUP

John W. Blanton, *Program General Manager—Aircraft Engine Field Programs.*

Allan J. Rosenberg, *General Manager—Aerospace Instruments and Product Support Department.*

### COMPONENTS AND MATERIALS

Charles R. Carson, *General Manager—Chemical and Metallurgical Division.*

Julien R. Charlier, *Vice President—Components and Materials Group International Projects.*

Robert T. Daily, *General Manager—newly established Plastics Business Division.*

Walter L. Robb, *General Manager—Medical Systems Business Division.*

### CONSUMER PRODUCTS GROUP

Fred R. Wellner, *General Manager—Television Receiver Products Department.*

### MAJOR APPLIANCE BUSINESS GROUP

Louis Alvarez, *General Manager—Refrigerator Products Manufacturing Department.*

James W. Cherol, *General Manager—Central Air Conditioning Products Department.*

Robert E. Fowler, Jr., *General Manager—Air Conditioning Contract Products Department.*

Glenn S. Olinger, *General Manager—Room Air Conditioner Products Department.*

### POWER GENERATION BUSINESS GROUP

Herman R. Hill, *Vice President, appointed General Manager—Steam Turbine-Generator Products Division.*

Edwin F. Phelps, Jr., *General Manager—Machinery Apparatus Operation.*

C. Robert Stahl, *General Manager—Knolls Atomic Power Laboratory.*





At San Juan's International Airport, Lynn-based Medium Steam Turbine-Generator Products Department's "traveling ambassadors" board Prinair's flight #007 to tour customer facilities on their Caribbean island hop. Below: the Virgin Islands Water and Power Authority's largest electrical generating facility, powered by a 35,000-kw GE steam turbine package.



## KING CUSTOMER: GE operations find new ways to court him.

The pleasing of customers is a never-ending task that is in constant need of re-invigoration spurred by new slants and fresh initiatives. The *Monogram* has been made aware of two out-of-the-ordinary efforts to inject new life into this business basic.

### MSTGPD goes island hopping

The plant-to-plant customer visit, whereby a group of General Electric employees travel to a customer's facility to see their products in use and to talk with customer representatives first-hand, has become standard operating procedure for many GE operations. But the whole concept was lifted to a new dimension recently by GE's Lynn-based Med-

*(continued on next page)*

## KING CUSTOMER (continued)

ium Steam Turbine-Generator Products Department.

What MSTGPD did was to airlift its employee group to the Caribbean for three vigorous days of island-hopping as they toured customer facilities in San Juan and Ponce, Puerto Rico and St. Thomas, V.I. Moreover, the employees were more than casual observers; MSTGPD made them truly "traveling ambassadors" representing their Lynn associates in the dedication of the Virgin Islands Water and Power Authority's largest electrical generating facility and in other events during a jam-packed schedule.

The trip became the fourth customer visit by MSTGPD employees as part of the department's "Commitment to Excellence" program. GE's MSTGPD general manager George H. Schofield explains: "During last year's Company-wide 'Best Buy' efforts we encouraged each employee to sign a 'Commitment to Excellence' pledge which actually serves as a guarantee to our customers that our singleness of purpose is the pursuit of excellence. Employees then nominated co-workers to be recognized as outstanding employees of the month. The response was so enthusiastic that we began an overall program through which a sample of 'quality' employees are given an opportunity to see firsthand the importance of department products and present our pledge of quality directly to the customer."

Customer reaction? "Our customers sincerely appreciate these visits," says Schofield. "Each visit affords the chosen worker the chance to study the customer's unique situation and carry his message back to his own work area. Each visit establishes a dialogue . . . each begins to relate with the equipment and their role in its development and successful operation."

Summing up the group's impression of MSTGPD's latest customer visit Schofield reports: "Our MSTGPD 'traveling ambassadors' have visited key customers from coast to coast and, as on all such trips, had a terrific time. This latest tour was likewise extremely successful since these chosen employees and customers can now better appreciate the role each has in providing dependable electrical service with a quality product. Each can now fully understand what a MSTGPD customer wants and expects from the turbine-generators we build for them."



MSTGPD employees inspect their products on location at the South Coast Power facility in Ponce, Puerto Rico.



Employees of the Virgin Islands Water and Power Authority admire a "Commitment to Excellence" plaque presented by MSTGPD visitors.

Flanked by Virgin Islands' Governor Dr. Melvin H. Evans and GE's international Sales Division Vice President Hoyt P. Steele, MSTGPD general manager George H. Schotfield participates in dedicating the world's largest single-steam water desalination plant on St. Thomas, V.I.







*MSTGPD Commitment to Excellence winner Padgett Hodge (right) listens to enthusiastic customer express appreciation to MSTGPD's ambassadors for their quality pledge.*



*Plant-to-plant visits help employees and customers "size up" situations on a one-to-one basis.*

*GE's International Sales Division Vice President Hoyt P. Steele greets Virgin Islands' Governor, Dr. Melvin H. Evans, on his arrival for the dedication of the Virgin Islands Water and Power Authority's generating facility. The Division served as consultant and prime contractor for the project.*



## A 40-STOP PERSONAL MISSION


A second extraordinary step in customer relations involves Arthur E. Peltosalo, Vice President and Group Executive—Power Delivery Group, and his staff.

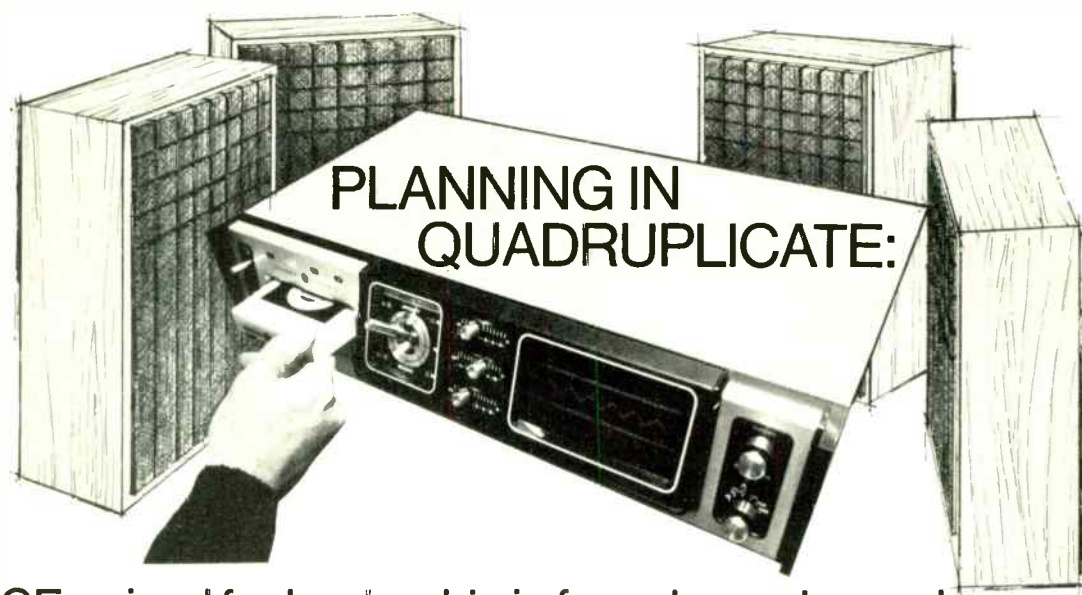
When he became Group Executive two years ago, Peltosalo set an arduous personal goal to conduct personal in-depth visits and staff meetings at the home bases of over 40 key customers for his Group's power transmission and distribution equipment—a goal that required travel to 36 states.

To fulfill this schedule, Peltosalo resorted to the unusual expedient of holding staff meetings, sometimes on a chartered bus as it rolled between utility customer meetings. His approach at each of these gatherings has been to take the Group's "Standard of Excellence" program face-to-face to the customer. The program initiated by Peltosalo actually challenges customers to insist that GE earn the right to be the supplier by which all other suppliers are measured. "Unless the customer perceives a difference," he insists, "then we must assume that we are no better than our competitors."

Is the strategy working? "It's exactly what our customers want," says Peltosalo. "They are actually helping us strive toward our goal of excellence . . . for example, when we met with Lee Everett, President of Philadelphia Electric, and his staff, they accepted our challenge by telling us what their engineers thought about our line. More important, however, is the challenge for our Group and Division managers to know their customers and learn their operating concerns—an opportunity that they would otherwise not have had."



*Peltosalo (left) on one of 40 stops at customer facilities. *



## PLANNING IN QUADRUPLICATE:

### GE poised for leadership in four channel sound.

Sound that envelops you from all four points of the compass—that's the latest advance in consumer audio electronics. In the drama surrounding the development of four-channel FM broadcasting, General Electric is a principal player.

**Far from a gimmick**, four-channel sound is a new dimension added to the breadth of stereo sound—the dimension of depth. By reproducing the reflected sound in the original recording environment, four-channel equipment gives the total illusion of being there.

GE's Home Entertainment Business Division is holding the key that may unlock a whole new business opportunity for the infant four-channel sound industry. That key is a simple and effective way of FM broadcasting in four-channel sound now being considered by the Federal Communications Commission. The National Quadraphonic Radio Committee, composed of 28 member firms of the Electronic Industries Association, including GE, is intensively evaluating the several competing proposals and expects to give the FCC its recommendations in the next few months.

**HEBD people** see the approaching government decision on quadraphonic FM broadcasting as the next major step forward for this Syracuse-based business—a leadership role in the fledgling four-channel sound industry itself.

Why is the GE four-channel broadcast proposal important? "We believe that mass exposure through the medium of broadcasting is one key to the wide acceptance of four-channel equipment and software of all kinds," says Richard B. Lewis, Product manager, Audio Systems and Components, Audio Electronics Products Department. "If our broadcasting system is accepted, our present stereo line will be ready to make the running change to quadraphonic."

**Four-channel sound right now** is proceeding with different degrees of vigor in several non-compatible directions, emphasizes Frank Hix, manager of Engineering for AEPD. To understand GE's position, it is necessary to grasp some basic technical distinctions. The familiar media of records, tapes and FM broadcasting all share two basic approaches to four-channel sound—discrete or matrix. "Discrete four-channel sound," says Hix, "is four separate tracks of sound information present in all stages of reproduction, from microphones through living room speakers. The Company's FM quadraphonic broadcast system is a discrete system. Matrix sound is a sophisticated way of starting with four channels, combining down to three or two on a record or the air waves, and then recreating an approximation of the original four channels electronically."





*Four channel sound in the making: Conductor/arranger Enoch Light already has 48 titles in four channel sound, two of them recorded for General Electric.*

*Antal Csicsatka, GE's man behind the U.S. stereo multiplex FM broadcasting system, could repeat his achievement for quadrasonic broadcasting.*




**Product manager Lewis** believes that the discrete broadcast system to which GE is committed will most benefit the broad cross-section of consumers to whom GE aims its audio products while at the same time allowing development of four-channel to its highest potential for the avid audio enthusiasts. He adds, "The discrete GE system is compatible with current monaural and stereo broadcast systems and was designed to allow its use in relatively inexpensive receivers without compromising the performance demands of more expensive audiophile receivers. In addition the GE system will relieve broadcast stations of the current constraint of broadcasting matrix four-channel music only, since it will accommodate discrete records and tapes as well. We feel that only a discrete four-channel system can put this kind of achievement in front of the consumer without undue complexity."

**HEBD has reason for optimism** on acceptance of its four-channel broadcasting system. It is not widely known even in Company circles that General Electric was instrumental in the development of what is technically called the 19KHz pilot tone stereo multiplex FM

broadcasting system now the standard system across the United States and the world. That system, as well as the new four-channel proposal, is largely the brainchild of a Hungarian-born GE engineer, Antal Csicsatka, who is now Consulting Engineer in the Advanced Engineering section of AEPD's Decatur, Illinois plant. Tony Csicsatka came to the U.S. in 1957 with the strong desire to be an American electronics engineer and has proved to be one of the prize catches in the electronics industry.

Thus in a highly competitive market full of pitfalls, HEBD's accomplishments already include:

- FCC acceptance of the GE/Zenith system of stereo broadcasting as the standard.
- A solid place in the broad appeal audio components and systems market.
- Top place in the radio and portable phonograph market.

Is four-channel sound destined to dominate the audio market as stereo does now? Dick Lewis thinks so: "We're convinced it is the future of the audio business. That's why we're so interested in the success of our four-channel broadcasting proposal." 

# ECONOMIC CONCENTRATION: DEBUNKING THE MYTHS

BY L. EARLE BIRDZELL, JR.  
Staff Executive, Office of General Counsel

Many of us who work for large companies have grown used to hearing the critics of business lash away on the theme that economic power in the United States is becoming steadily more concentrated into fewer and larger corporations. These corporations, we're repeatedly advised, use their power to diminish competition and reap fat, easy profits. The point of this *Monogram "Perspective"* is to review several recent, serious studies that indicate that a great many of the favorite premises of economic-concentration theorists rest on very slim and shaky statistical underpinnings. Indeed, several crucial premises appear to be supported by nothing more substantial than the power of parrot-like repetition.

To backtrack: In the early decades of the century, critics rallied 'round charges of monopoly. But by the 'thirties it was apparent their rallying cries were simplistic: Monopolies didn't really exist; the economic reality was that even the largest companies had worthy competitors.

The critics shifted their sights to industries with a relatively small number of large producers. They argued that the smaller the number of sellers in a market, the more likely they are to recognize (and act upon) a common interest in high prices, minimal innovation and poor service. Over the years, their arguments jelled into an economic ideology called "structuralism."

Some of the key tenets of the structuralist faith are these:

- Firms in so-called concentrated industries earn inordinately high and easy profits.



Lawyer Birdzell's myth-debunking books (left) are climbing toward a match with myth-makers.

- Firms in these industries yield too readily to union demands; the notion here is that wage increases are easy to pass along to the customer in the form of higher prices.

- Thus, it follows that these industries are responsible for inflation.

- Also, during recession periods, these industries are responsible for unemployment; here the argument is that they should have reduced prices enough to maintain output and employment.

The notion that "big firm" industries feature soft competition and easy profits has never been credible to those who have spent their business lives battling for orders in just such industries. Yet these concepts supposedly were borne out by irrefutable statistical analysis; they went unchallenged for years and bulwarked many solemn anti-business books and articles.

Now, some probing new economic studies seem to bear out the instincts of the skeptics:

- Good profits appear to stem from the economies associated with large-scale production, rather than simply from participation in a concentrated industry. For an individual firm to have a high market share helps the statistical odds on increasing profits—but just being in a concentrated industry is no help at all.

- Prices have risen *less* in concentrated industries than they have in unconcentrated industries, according to an economic study of the relationship between concentration and inflation commissioned by the Antitrust Division of the Department of Justice and conducted by



Prof. Leonard Weiss of the University of Wisconsin.

- A series of studies of the relationship between industry concentration and wages concluded that "workmen in concentrated industries seem to receive no more for their services than they might in alternative employments...."

- The claim that concentration causes unemployment was studied statistically by Prof. F. M. Scherer of the University of Michigan and others, with the verdict that "... there is no significant indication that concentration makes a systematic difference one way or the other in cyclical behavior of employment."

- The Cost of Living Council recently analyzed reports from companies with annual revenues of more than \$250 million in eight industries, most of them concentrated. At the beginning of 1973, these industries had demonstrated cost justification for price increases of 1.7 percent. Yet the largest companies in these industries were only able to increase prices by 1.2 percent during the first four months of 1973. Industries where the largest companies are unable to keep price increases abreast of their rising costs of doing business during inflation can hardly be termed "non-competitive."

- Comparative studies of concentration in the United States and other industrial countries show that the same industries tend to be concentrated in the same degree in the countries studied. This is about the result you would expect if you proceeded on the premise that the pattern of concentration in an industry is largely determined, not by the rapaciousness of its participants, but by the logistics of designing, production and marketing its products.

**Debunking the mythology** of the economic structuralists is more than an academic exercise. Last year, for example, the Antitrust and Monopoly Subcommittee of the Senate Judiciary Committee heard testimony on a proposed Industrial Reorganization Act (S. 1167), which is rooted in structuralist theory. The bill, introduced by the subcommittee's chairman, Sen. Philip Hart of Michigan, would establish two new antitrust agencies to dismember leading companies in any industry in which four or fewer companies do as much as 50 percent of the business.

General Electric has a target's interest in the legislation, since the act specifically directs the new agencies to go after "electrical machinery and equipment." And Prof. David Schwartz-

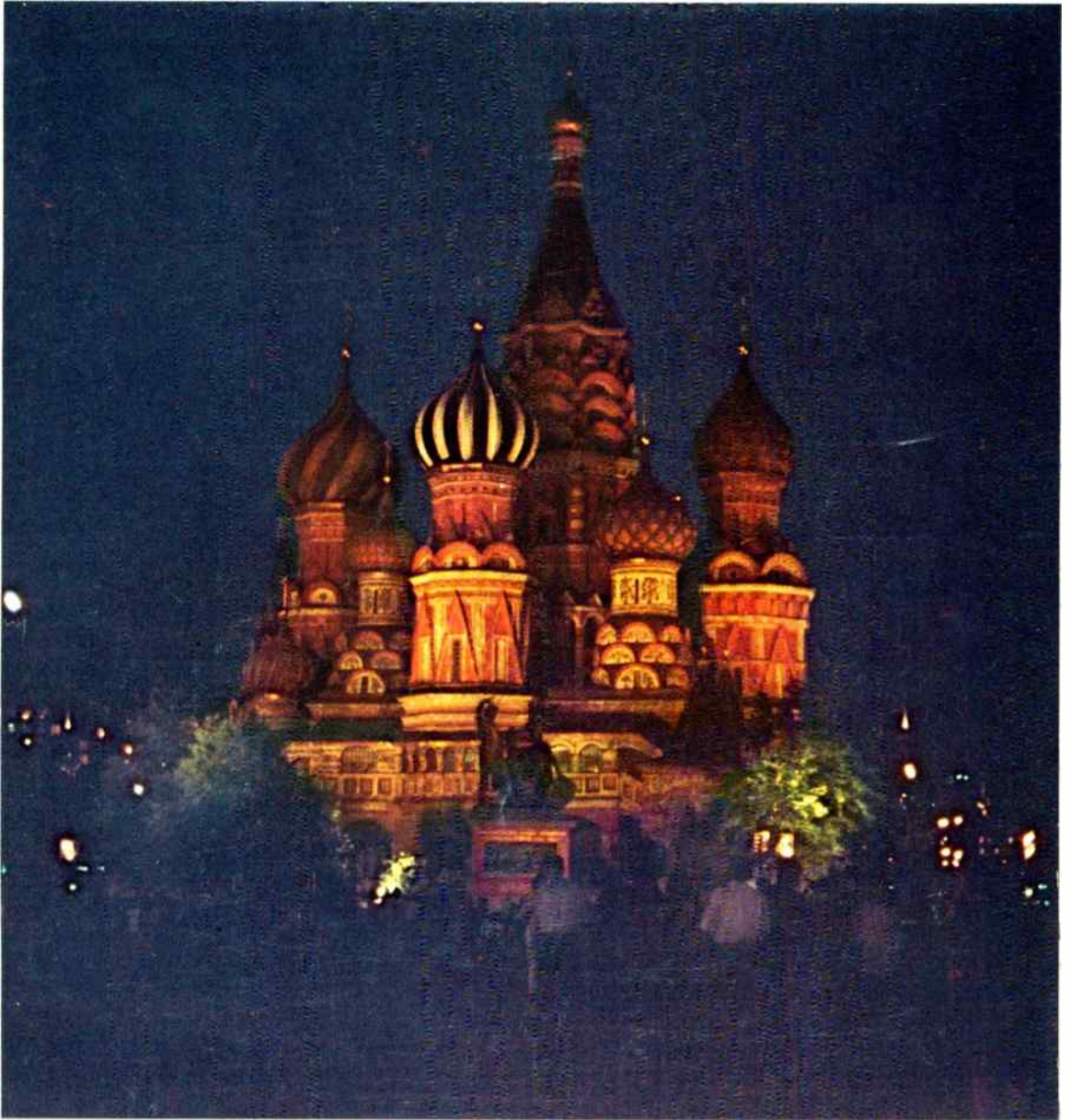
man of the New School of Social Research, testifying in opposition to the act, singled out GE as one of those companies which would be fragmented.

The economic community has responded coolly to the bill. One who testified was Prof. Donald Turner of Harvard, co-author of the leading academic proposal for deconcentration, who reported his loss of "whatever faith I might have had in the efficacy of deconcentration legislation." Professor Turner was formerly head of the Anti-Trust Division of the Justice Department under President Kennedy, and with Carl Kaysen, published "Antitrust Policy," in 1959. Dr. Kaysen, now director of the Institute for Advanced Studies at Princeton, has long since dismissed the proposal as "academic" and "speculative."

**Early passage of the act is unlikely**, but its advocates are prepared for a long struggle. One senior member of the subcommittee staff said she did not expect the bill even to reach a vote of the subcommittee for another four years. But some supporters are hopeful that events will play into their hands. One supporter recently cited the rising tide of anti-inflation sentiment as offering hope for his cause. While prospects are still not bright, he observed, "at least it is now realistic to talk about its chance of passage."

Economics has the misfortune to be a complex science of unpleasant choices, centered about the dismal truism that there is no such thing as a free lunch. Practicing politicians, faced with unpleasant choices, are often tempted to opt for an easy out. Inflation policy is a case in point; it offered an unpleasant choice between (a) some combination of tighter credit, higher taxes, and less government spending and (b) more inflation. Structuralist theory offered the easy out. Given the structuralist myth that high prices reflect the discretionary power of "big business," the structuralist remedy was price control, with enforcement focused on large companies. Inflation, of course, continued.

Happily, a growing number of economists are marshalling the facts which contradict the structuralists. Yet the structuralist myths persist because they have the virtue of convenience; they appear to provide an all-purpose scapegoat and an all-purpose remedy for virtually any economic ailment. Only by extending understanding to the broad public beyond the economic and business community can we be assured that structuralism will not plunge the government into errors of grim proportion. **□**



**Return to Russia** on GE business recently brought GE employee Anatole Gurewitsch back to his native land after a fifty-year gap. His impressions, verbal and photographic, begin on page 18 of this issue. Above: his night view of St. Basil's Church in Moscow, built by Ivan the Terrible to celebrate his victories over the Tatars.