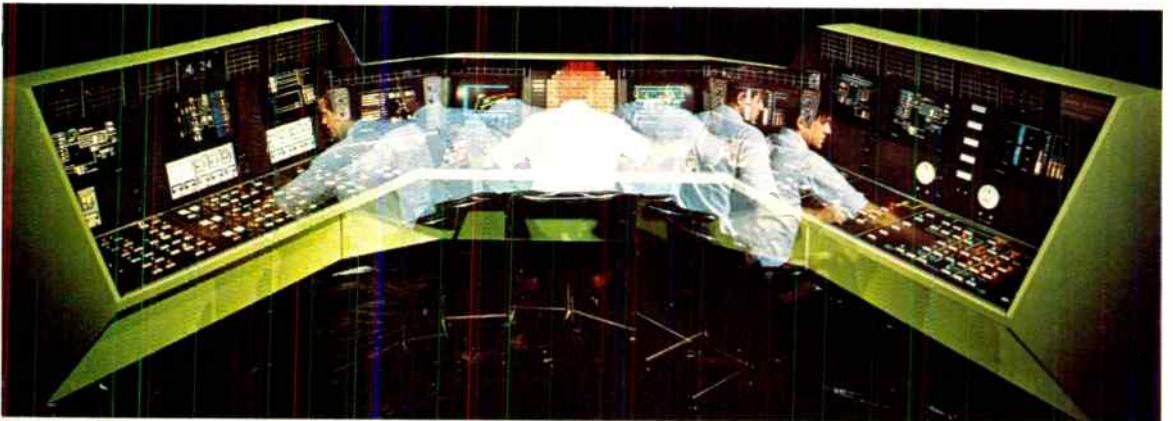




FRED BORCH  
SUMS UP—AND  
LOOKS AHEAD



NEW LIFT FOR JETS



FOR ENERGY, A HIGHER PRIORITY



VOLUME 49, NUMBER 6

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**A TALK WITH FRED BORCH**



The retiring Chairman discusses his personal plans ...

In the next few weeks the man who has been General Electric's Chief Executive over the past decade will move out of his 45th floor office in the headquarters tower in New York and set up a new, personal base of operations in Manhattan. The *Monogram* asked GE's retiring Chairman, Fred J. Borch, to comment on his plans, his recollections, his observations.

"As I look ahead," he said, "my chief concerns aren't internally with General Electric. We've got a really great Company—the greatest, I think, there is. We've got the greatest organization, very fine people all across the Company. So my primary concern is directed outside. It's the environment in which General Electric—and business in general—must operate. That's where I plan to be spending a good share of my time: working with other people, mostly businessmen, to put across to the public—as we haven't put across in the past—what it takes to keep the American system operating."

*"Where will you be concentrating these efforts most specifically?"*

"One of the most important things we've got to do—all of us in business—is to change the misconceptions that the American people, by and large, have about business and, particularly, big business. As a specific, when the pollsters ask people how much profit business makes, their answers come out to an average of something like 28 cents after taxes on the sales dollar. Now that may look like a small thing—that people greatly overestimate our percentage of earnings. But look where it leads. When



challenges for General Electric people ... EO/MR ... strategic planning ... a \$20 billion Company.

legislators press for cleaning up the environment, and carry occupational safety standards to almost extreme levels, and look for ways to pay for all these other so-called social costs, the general public thinks that business can afford them, business can finance the whole range of costs. But if we can scale these profit judgments down to reality, more in the range of five cents on the sales dollar after taxes, then the problem of financing these social costs takes on an entirely different dimension. That's one thing that I think our businesses have been very remiss in getting across."

*"What's another example?"*

"A second broad area will be to help build understanding that those who want to break up businesses and reduce profits, and so on, are striking at this country's real base, the foundation on which the government and other institutions are built. The income, the wealth of the U.S., flows chiefly from business and, more importantly, from the employees of business. That's the revenue base. Any effort that's made, for whatever reasons, to injure U.S. business hits at this base—both at the corporations themselves and at their ability to employ the people who are going to pay the taxes. These may be simple, elementary themes. But we haven't done a very good job of getting them across. We've got to do better. I'll be working with people who can, hopefully, come to grips with these problems. That's the long-range view of what we'll be attempting."

*"What about the shorter range?"*

"The focus of those with whom I'll be working will be on the many issues that are in front of our legislatures all of the time—especially Congress. Here we get into subjects like international trade, the whole question of so-called tax reform, labor-management relations, questions on the environment, pollution, in-plant safety, multi-national companies, and the like. We'll be trying to gain a better public understanding of the pros and cons of these pieces of legislation which, laudable as the purposes may be, must be looked at in terms of the impact their timing and funding will have on that longer-term concern—the business-built revenue base on which this society rests."

*"Sounds like a big job."*

"Yes, for all of us. Perhaps some of us can get more deeply involved. In addition, I've accepted several memberships on the boards of other major companies. And don't laugh too loud that I've already improved my golf game considerably while Reg Jones's great golf game has begun to slip! It's a question of what we're concentrating on!"

*"What do you see when you look ahead for General Electric?"*

"There are serious challenges that the people of General Electric have to face—that Americans generally have to face. I'll just mention a couple of them that are very serious. One of the basic problems is inflation, the management of inflation—which gets right back to the matter of recognizing that unless we have sound monetary and fiscal policies at the federal and the

*(continued on page 4)*

state and local level, there's no way to keep inflation under control. Controls are band-aids put over cancer. Inflation begins with government spending, with running up these great deficits and then using the printing presses for more money to pay the bills. Getting this whole matter of inflation under control is very critical to everything the Company will be doing."

"What other challenges?"

"The second one I'd cite is one that is of particular concern to General Electric and General Electric people. That is international trade—important to us because a substantial portion of our jobs in General Electric are the result of our exports. And as I see it, the whole international situation is in jeopardy, and along with it the value of the dollar. You know my story on this (see summary of Chairman Borch's National Foreign Trade Council address, page 7). Unless we make some really prompt progress on this international front we're liable to be in a recession that's not of our own making—and a serious one. And General Electric people ought to be aware of this and do everything they can do to be as helpful as possible. The corollary to this is that the Company's success in the long run will continue to be, as it has been before all through our history, to keep on doing those things that improve the standard of living in all the countries where we operate. This adds up to a tall order: creativeness in all respects and productivity at all levels. I have confidence, though. General Electric people are good at these things. They'll get them done."

"Do you see challenges ahead for the Company in terms of its organizational structure?"

"I think the basic structure we have today will take the Company through several more billions of dollars of volume—with the necessary modifications that must be made all the time. The real challenge from an organizational standpoint will come four or five years from now when you look toward a \$20 billion Company and you say 'All right, how do you manage that?' Ralph Cordiner certainly showed us how to manage it well from \$2 billion to \$5 billion; we've managed to live with a rise from \$5 billion to \$10 billion; and Reg and the Vice Chairmen are going to have to take a hard look at what's needed when we approach that \$20 billion before too many years."

"What other challenges do you see these growth rates involving?"

"I'll make two observations. One has to do with the importance of competitive scale. One

goal for us at General Electric should be that of maintaining the competitive thrust that comes just from keeping the percentage gap—thus enlarging the absolute gap—that exists between us and our competitors. But, lest this be construed as only an abstract managerial goal, my second observation concerns the importance of this kind of growth to General Electric people. It's something that's not much thought about. That is, that only by growth, and by fairly steady, consistent growth, are we able to have the opportunities for upward mobility in this Company that really challenge the organization. Strange that people so often miss how corporate growth correlates with personal opportunities and individual growth!"

"You toured Europe recently with Reg Jones. Any observations about the trip?"

"A trip like this one—any trip we take offshore today—reminds us forcefully of the fact that economic nationalism is not waning. If any thing, it's the reverse. Everywhere you go, people are asking, 'What can we do to increase our production in *this* country?' And saying, by implication, 'We want to keep as tight a lid on imports as possible in order to give our own people jobs.' But in their hearts they know this can't be the way to go. For the world community, long term, the interest has to be in trade back and forth. You can't shut down your borders and say, 'We're only going to export.' The U.S. is saying it, too—in things like this proposed Burke-Hartke bill that so horrifies me. As my Foreign Trade Council talk indicated, the other nations are looking to the U.S. for leadership. It's critical that we supply it."

"What do you see ahead in the area of opportunities for minorities and women?"

"Take minorities first. I think we understand



1963: New "team at the top"—Borch and Phillippe—are congratulated by Ralph Cordiner.

the problem now. We've made real progress. We've got to make a lot more. And I'm in hearty agreement with the idea that a major part of our approach, and of a much larger national approach, has to be directed toward encouraging more minority youths to enter the technical disciplines that, so often, provide the career paths into management jobs. To have blacks representing only one per cent of our engineering graduates in the U.S., as an example, is a situation that has got to be corrected. Unless our system changes this, there's no way we can get the upward mobility here that all of us think has got to come."

*"On the subject of women?"*

"Here we have the opportunity to move a lot more quickly than we have. Educational limitations have been less severe, in terms of women, than they have been with minorities. So here it's a matter of understanding and moving more quickly than we have in the past. We've got a great reservoir of talent here in this country as a whole that we haven't been utilizing—and that goes for General Electric, too, I'm sorry to say. But we're on the way now, and can expect to make real progress."

*"In addition to your look-ahead views, we wanted this to be an occasion to look back—"*

*"I'm much more interested in talking about the future."*

*"Still, Monogram readers would be interested in having you hit some of the past high points—starting with how you came with GE."*

"I got out of Western Reserve University majoring in economics and minoring in political science—that was quite a combination in those days—and all set to go to Harvard Business School. But that was in 1931. And in spite of a loan from Harvard, and a job waiting tables,

I was \$500 short. I couldn't raise that last \$500. It so happened that I was president of my fraternity when Fred Harroff was the alumni advisor. He was with the Lamp Division—he later became Vice President there. He sold me on the idea of coming to General Electric, with or without that Harvard education."

*"Were you conscious at any point in those early years of becoming 'someone to watch'?"*

"No. I've had a lot of fun. There were great people to work with. I was really lucky in having bosses who just kept crowding me so I never really got to finish, to my satisfaction, any assignment I was on."

*"When you became the Company's top officer you did some crowding yourself, to generate a new momentum."*

"You have to put that in perspective. The Company's morale had been pretty badly shattered by our antitrust experience. And it was not only the 10% of the business that had been directly affected by the actions of these few people—it was the other 90% as well. Flip (the late Gerald L. Phillippe) and I recognized the need to get a new spirit moving, but we couldn't until we'd put that whole experience behind us. Ralph Cordiner had done a great job of carrying us through the worst of it, so we were able to wind up the situation in 1964. Then we emphasized the future and our growth opportunities. We tried to restructure ourselves on the international front. We got people to looking ahead again. And believe me, when you give the 'go' signal to this organization, be careful! They really go! We made mistakes. I'll be the first to admit that. But we learned. For one thing we gained experience—a lot of it the hard way—in international markets. Now we feel at home on the international scene, which



1972: As Director-Emeritus, Cordiner is on hand to extend best wishes to Reg Jones and Fred Borch.

*(continued on page 6)*

was a very important thing to get done. We were fortunate, too, in having a lot of exciting new ventures that were just coming to the surface at that point. They had been there, but weren't really blossoming—nuclear, jet engines, computers, all of them representing some real excitement."

*"Those were exciting days."*

"They were exciting days. Our problem was that we had too many of them converging on us at once."

*"Do you consider strategic planning the main bulwark against repeating past mistakes?"*

"It will be a great help but is by no means a panacea. Consider some of the problems—our present situation in commercial jet engines, for example. We've got a good program there, highly promising, but it has been delayed for two years because of the general worldwide recession that's hit the airlines and caused them to cut back and stretch out on their expansion plans. When it comes to predicting recessions, I don't think strategic planning is going to help us a great deal. But we'll ride through this and it will turn out to be a good venture."

*"How about computers?"*

"There I think strategic planning could have helped. We made a management error in that we sized up the business at that time in terms of the modest scale of its importance in comparison with the total General Electric, rather than sizing it for what the future opportunity would be. We kept it at the Department level, and it took a long time to bring it up to the Group level. I take full responsibility for undersizing it, not putting it high enough in the organization to get its needs clearly out on the table. We'll not make that mistake again. A reverse situation at present, is that we've given the Information Services business a Division status—well above what its present dollar volume would support. The same with the Transportation Division—it was at that level several years before its size would warrant. So we've learned from the computer experience."

*"And nuclear?"*


"I don't think strategic planning would have helped us there a great deal. Our problems were caused by our lack of ability to read President Johnson's mind. The massive entrance into Vietnam, the huge deficits, the ensuing runaway inflation—particularly in construction costs—caused our costs on those nuclear turnkey projects to run way beyond any reasonable projections. So strategic planning isn't the cure



The plaudits begin: the Fred J. Borch Research Center is the new name for Nela Park's research facility.

to all ills. But it certainly does sharpen and point up more clearly the risks involved. It puts you in a better position to make judgments as to whether a given risk is reasonable. The 'what ifs' are laid out. It's all out there in front of you. And that's a substantial contribution."

*"Let's finish by talking about things that, in retrospect, give you great satisfaction."*

"The greatest satisfaction I take is in seeing an awful lot of people I knew way back when stepping up to the ball in positions of real responsibility and doing a whale of a job. From a business standpoint I'm delighted that we were able to ride through in the early stages with some businesses that are just terrific for us today—things like air conditioning, gas turbines, engineering plastics. You're going to see medical systems and commercial jet engines take off. You'll see nuclear become a very important technology, not only for the Company but for the world. We've just been very fortunate that we had the talent and the financial strength in the Company that we've been able to pursue all these things at the same time. And I'm sure that there are other opportunities like them out there, sleepers that we don't even know about yet that are in somebody's lab or somebody's mind. That's what makes General Electric so fascinating. We've got a great Company—sometimes I think people outside the Company recognize it even more clearly than those within. The greatness of General Electric—there's a subject on which I haven't changed my mind in forty years." 

## Amidst the farewells, a deeply felt talk on world trade



On Monday, November 13, Fred Borch took the podium for his second address to the National Foreign Trade Council. His first had come six years earlier. It had expressed "cautious optimism" about prospects for improving world trade. There for his second look, the GE Chairman declared his new position quickly:

"The real future of international trade and investment is more in doubt than it was then. Last year's monetary reforms and changes in currency valuations have certainly failed to solve any basic problems; surplus countries now have an ever greater political reluctance to revalue their currencies; more U.S. dollars that other countries don't want are pouring out each month."

The audience took notice that they weren't about to hear just another diplomatically worded talk about international brotherhood. Fred Borch was letting go, in blunt terms, the heartfelt beliefs drawn from an intensive re-study of an area with which he is deeply conversant. (In this space the full content of his 40-minute talk can only be suggested. Interested GE people should send for the full text).

Chairman Borch sketched in the details of what has happened to the U.S. in recent years: skidding from a peak trade surplus of near \$7 billion in 1964 to a deficit that in 1972 will, "if we are lucky," just miss hitting \$7 billion in reverse; a country that had been "outward-looking" now become one flirting with "the self-defeating restrictions of the Burke-Hartke Bill and similar nostrums."

The scale of the problem, he said, is one "that can overwhelm us—as well as all other industrialized nations—into a world-wide recession

unless we take powerful and rapid measures of containment."

He refused to settle for the usual answers that the main trade problem is monetary, or tariff and non-tariff barriers, or differing taxation systems. These are only the "manifestation of the underlying basic problem."


The core: "Major industrial nations are still trying to solve their domestic adjustment problem by shifting a significant part of the cost of their national socio-economic policies onto the mechanisms of international trade."

Borch pictured the U.S. as losing out in this shift because, while other nations have put trade and offshore investment "at the very center" of their policies, "U.S. foreign economic policy has been second and subordinate to our political policy." The result: "Today, in effect, we have no foreign economic policy worthy of the name." Unless we quickly evolve one, he warned, "tomorrow's international economic problems, I fear, will make today's look like high-school textbook exercises."

He analyzed how other countries have moved swiftly ahead in world trade:

- They have practiced "shielding"—using government subsidies and tax forgiveness to help their industries quote lower prices for exports than for domestic use.
- They have encouraged large-scale operations and mergers, viewing large corporations as "engines for pulling the national economy to growth," while the U.S. threatens to break up its large corporate competitors.
- They have made importers help pay the costs of their socio-economic policies while relieving their own exporters of this burden.

Observing that world trading nations "are aware that better solutions are needed," Borch asserted: "The industrial nations of the world await our initiative."

He concluded by offering his own recommendations, centering on the theme: "Solutions cannot be achieved by cutbacks to smaller volume, that is, trade reductions; solution can come only through expansion—perhaps a massive expansion." The United States, using "the only one big blue chip we can put on the table—the openness of the huge U.S. market," setting the goal of trade equilibrium at the heart of our policies, should negotiate new arrangements assuring "that the U.S. share of the incremental growth of international trade will rise dramatically." 

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# NEW THRUSTS FOR THE GENERAL ELECTRIC FOUNDATION

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**W**hat is the General Electric Foundation? What's its relationship with General Electric and with the Company's own educational and charitable activities? How is the Foundation changing to meet new needs and opportunities? These were the questions put recently to Dr. Donald J. Watson, who wears two hats as both the Secretary of the Foundation and manager of the Company's Educational Support Operation. Dr. Watson's answers, summarized on these pages, include news about new directions for the Foundation in 1973.

The General Electric Foundation is a separate entity from General Electric. It was established in 1952 with a gift of General Electric stock—the basis of a portfolio that now includes other types of investments and that has grown to a valuation of about \$27 million. This growth provides the Foundation with funds to take on an ever broader range of activities and to maintain a steady level of support, independent of the Company's own fortunes.

This idea of providing a constant flow of funds, irrespective of the Company's profit performance, was one of the key factors in the minds of the Company's Board of Directors in establishing the Foundation. The purpose was, also, to give better direction to charitable con-

tributions and educational support in the name of General Electric. Today the Foundation's activities are directed almost exclusively toward support of education.

True, the Company has its own Aid to Education Program, but this is limited primarily to contributions of equipment for instructional or laboratory purposes or grants by local components to nearby institutions.

The broader and more general task of providing grants to aid educational institutions and to provide stimulus for needed changes in education is the responsibility of the Foundation.

One more point about the relationship between the Foundation and General Electric: the Foundation has its own Board of Trustees, made up of GE officers and managers. We here at the Foundation's administrative headquarters in Bridgeport carry on the specific activities of the Foundation under plans and budgets that have been approved by the Trustees.

A look at plans for 1973, recently approved by the Trustees and the Board of Directors, shows both the range of the Foundation's programs and the new thrusts being introduced. Incidentally, the budget in 1973 will exceed \$3.2 million for grants to selected educational institutions for a wide variety of projects.

Here are the most important of the new thrusts the Foundation will be giving to its program in 1973—changes that are the outgrowth of a year-long task force study of the Foundation's aims and objectives:

- The value of grants designed to help increase the supply of qualified minority personnel in engineering and finance will be increased to \$700,000. Included in this area will be support for engineering schools, including predominantly black schools; support for dual-degree cooperative programs between black undergraduate schools and major engineering schools; and production of a film dramatizing the opportunities in engineering for minority students for screening in high schools and junior high schools across the country.
- The budget will be doubled to \$350,000 for grants to improve guidance counseling and technical/vocational education. We are developing plans to work with selected secondary school systems, preferably in major plant communities, to set up pilot technical/vocational programs that will be applicable to other school systems on a national scale. The purpose of these programs is to encourage more young



# GE FOUNDATION



**New 1973 thrusts: grants to encourage more minority technical graduates...higher limits on 'matching'... emphasis on vocational training... research to build a better business environment.**

people, including those from the inner city, to participate in apprentice and technical/vocational training, with the added expectation that many will be motivated to continue on into engineering. Continued funding will be provided for summer programs for high school guidance counselors at four universities, with increased emphasis on opportunities for minorities and females in engineering.

- The Foundation will increase its budget to \$415,000 for grants to support both research projects and professional programs relating to the political, social and economic environment in which business must operate. This increase reflects the growing need for a better understanding of the world business environment, business-society-government interfaces, the role of the large corporation in society, and the economics of international business. Summer programs for college-level educators will include a program for professors of economics at the University of Chicago and a second, at UCLA, for professors concerned with business-society-government relationships.

- Research on critical societal problems will be augmented. Grants will aim at stimulating research directed toward solutions in such problem areas as ecology and the physical environment, power generation and delivery, transportation, and medical and urban systems.

- To help educational institutions relate more effectively to societal needs, the Foundation is providing incentive awards in such areas as curriculum revision, new teaching methodology, and community involvement.

These new thrusts in Foundation grants will continue to be supplemented by regular Foundation programs of long standing, including both undergraduate and graduate departmental grants to colleges and universities.

The Corporate Alumnus Program is being changed next year to permit individual employees to contribute a yearly maximum of \$3000, compared with the present \$2000, to colleges and universities for matching by Foundation funds. To eliminate the costs involved in processing very small gifts, the minimum individual amount for matching will be \$15.

*(continued on page 10)*

## GE FOUNDATION (continued)

Many of the grants made by the Foundation are not large, individually, but they often provide "seed money" to begin a significant piece of work which then attracts additional support.

A prime example of this type of grant was the 1972 funding of a Family Service Association "Play for Living" called "Adam and Even" (see the summary on these pages).

One final point—a point we're proud of—is that since its establishment 20 years ago the Foundation has pioneered many activities that are now duplicated by other companies and foundations. Examples include the Corporate Alumnus Program, summer programs for high school and college faculty, unrestricted grants to university departments in place of scholarships, support of college research and study in business administration and industrial economics, and now the programs to increase the supply of qualified minority professionals.

In summary, we see the Foundation as a creative force for constructive change. It is a living and growing entity that continues to change its program in anticipation of the emerging needs of education, society, and business. The new and increased emphases planned for 1973 in support of minorities, technical/vocational education, and better society-business relationships represent significant new directions.

"Adam and Even" is the title of a half-hour play commissioned by the General Electric Foundation. Addressed to the problem of equal opportunities for women in business, the play is designed to be shown to management groups—it is currently being used at Crotonville—as a springboard for discussion of the play's theme.

To provoke reaction and make male managers aware of "blind spots" in their attitudes toward employing and promoting women the play, written by Elizabeth Blake, takes an "historical" approach to the present by projecting the audience into the 23rd century for a look backward at the "primitive times" that are today. By this means it points up how men at present are, unwittingly, ruled by myths and attitudes out of the past—subtle patterns of prejudice that prevent true equal opportunity in employment and advancement.

The play grew out of a suggestion by Roy Solaski of GE's Management Development Institute and was commissioned through the efforts of the Foundation's Calvin A. Conliffe.

## Foundation-sponsored



The year is 2250 A.D. A narrator appears to introduce this play for the 500th anniversary of Company X. Its purpose: to witness what it was like for the unliberated working woman in the 20th century—specifically, Irene, a secretary with 8 years' experience and real knowledge of the business, and Miriam, a minority employee. Their boss is Harry, an "intelligent" businessman completely unaware of his prejudices toward women.



Exhausted, Harry drops off to sleep. His dream quickly turns into a nightmare in which the sexual tables are turned and he is the recipient of condescending solicitude. He dreams of Irene and Miriam coming to visit. They, with Mary, treat him like a small, sleepy child. Mary croons "Rock-a-bye Baby" while Miriam asks: "What's he going to be when he grows up?" Irene: "Maybe he'll be the President's secretary or a nurse."

# play spotlights women's role in business



Harry receives a call from Personnel recommending that he employ a female as his assistant. Harry's voice falls three octaves as he objects: "This is not the place to break in a woman. Who knows what they want? They're too emotional." To intensify his shock, the woman recommended is Irene. "You mean Irene's the man—I mean, the person—you've had in mind?" says Harry. "You gotta be kidding!"



Harry is still ruffled as he arrives home for his double martini and, hopefully, some consolation from his wife, Mary, portrayed by the narrator. Fat consolation! Mary thinks the news about Irene's proposed promotion is just great. Further, she herself is going back to work. Harry's reactions make her see him differently: "I never thought of you as a male chauvinist, but you're acting like a man who's really running scared."



Harry's topsy-turvy dream world enters a domestic phase. Mary reads her newspaper, oblivious to his complaints about his headaches or about his right hand that's gone numb. She smiles sweetly. "So? Lots of people are left-handed." She warns him men are fragile—the job may be too tough—men die earlier. Harry screams: "I'm not a statistic! I'm not MEN! I'm me! Harry! An individual! Look at me! Look at me!"



His own panicky voice awakens Harry. He embraces Mary, asking "Do women feel they're being squashed by men?" As to her working: "It's up to you." When Irene appears, Harry tells her "You're a girl interested in upward mobility — nothing wrong with that. I want that for you, too." Enlightened, Harry promises to push for employing women in a wider variety of jobs at all levels on a par with men. **END**

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## FIGHTING FIRE WITH PHILOSOPHY

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Knock on wood.

General Electric hasn't had a really costly fire since 1966, when a warehouse full of television sets burned down just before the Christmas season at a cost of \$5.5 million.

And no one has died in a General Electric plant fire in more than a decade.

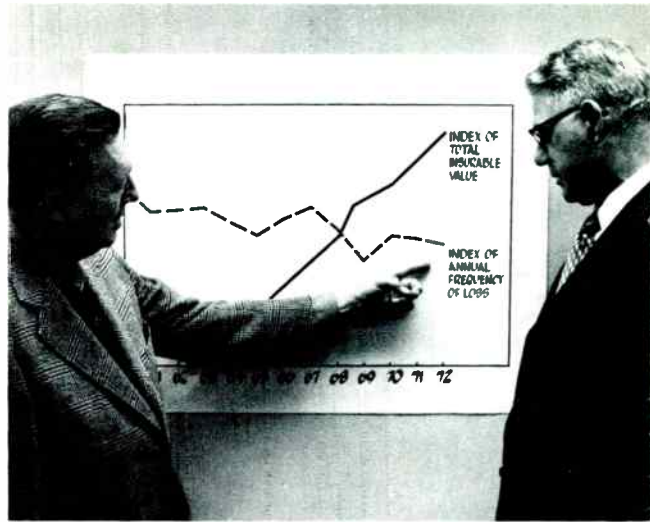
GE has been defending its plants and people against fire by building a conscious fire-prevention philosophy among decision-making managers. The approach seems to be working.

Back in 1961, when sales were at the \$4 billion level and insured assets were only \$2.6 billion, GE had 166 losses from fire and other insured hazards such as storms and vandalism. Last year, with sales exceeding \$9 billion and insured assets up to \$6 billion, the Company had only 123 losses. For most years in the past decade, GE has had a loss ratio well below the two cents per \$100 of insured valuation that represents the dividing line between a good record and an excellent one.

The Company's chief advocates for philosophy over techniques in fire prevention are Norman O. Chadbourne, Consultant—Fire Insurance in the Company's Corporate Insurance Operation, and Ernest M. Hanauer, Specialist—Fire Prevention. Chadbourne explains their approach:

"General Electric is so diverse, involved in so many different kinds of businesses, that we can't simply make a set of ground rules that is applicable across the board. So what we do is to constantly sell the philosophy of fire prevention and control at the decision-making level. Our general managers, our managers of manufacturing and finance, are convinced of the importance of effective fire-control to their businesses. They're willing to approve sound fire-control expenditures. They're eager to instill fire-prevention consciousness down the line in their organizations."

**Direct responsibility for fire prevention and control** is lodged with the managers of individual businesses. Large plants have their own full-time, professionally staffed fire departments; smaller plants train individual employees to serve as part-time firemen.



**Chadbourne and Hanauer: bringing fire losses down as insurable value goes up.**


From New York, the Corporate Insurance Operation keeps up a constant flow of communications to individual plants and inspects facilities regularly in conjunction with insurance industry fire-control experts. In addition, it carries out a continuing series of lectures, demonstrations, and training programs on fire-control methods, plus Regional Fire Schools.

Chadbourne and Hanauer find GE's recent fire record particularly gratifying because it has been achieved in the face of severe challenges:

- The rapid growth in GE business. A busy, expanding business is always more vulnerable to fire than a slow-moving one.
- Increased use of automation. While automation diminishes the likelihood of conventional "people-caused" fires resulting from such hazards as the careless placement of materials, it increases the concentration of value at a given location, thus increasing the risk that if a fire occurs it will be enormously costly.

- The proliferation of new technologies. As Chadbourne puts it, the Company is always "exploring the edges of technology," trying to create new products, improve old ones, and reduce production costs. Each innovation requires evaluation from a fire-prevention standpoint.

For instance, some new synthetic materials are highly flammable and require special handling to minimize fire hazards.

None of the GE plant fires that have occurred in recent years can be attributed to new, volatile materials or to new production techniques, probably because GE management reviews the planning of each new operation from its earliest stages for fire prevention and control. 

## CORPORATE BRIEFS

**Important assignments at the national level** have been accepted recently by the Company's Vice Chairmen, in addition to their corporate responsibilities. Jack S. Parker has been elected Chairman of The Conference Board, an independent non-profit business research organization. Also, Herman L. Weiss is serving as Chairman of President Nixon's Commission for Executive Personnel Interchange, by which governmental executives spend a year in business and businessmen devote a year to government service.

**In this year's LeMouse 5000 competition**, General Electric people placed four among the top ten winners. No, they're not daredevil racing drivers. The event, a fun competition at the 1972 Design Engineering Show, posed a neat engineering problem: build an MPV—a mouse-trap-powered vehicle—that would travel the greatest distance powered solely by the spring of a Victor Four Ways Mousetrap. Out of 94 entries, Space Division's Frank B. Keiser placed second, with a distance of 751.4 feet. Fourth place was taken by engineering consultant Pierre H. Boucheron; fifth by Industrial Heating's Richard L. O'Brien; and tenth by Dallas E. Cain, also an engineering consultant on the Corporate Executive Staff. LeMost!

**Too much Federal income tax is withheld**, says a letter to Chairman Borch from the Commissioner of the Internal Revenue Service. Aiming at correcting under-withholding, the IRS put new rules into effect this year. But the new rules aren't working properly because employees haven't been claiming the allowances and deductions provided for in the new law. The result, according to GE tax expert George H. Kitendaugh, is a "continuing concern with the economic impact of overwithholding." Available from personnel accounting components: new, simplified Form W-4's to be used in claiming withholding allowances by GE people who didn't fill out the forms in a Company-wide canvass last January.

**Rehabilitation of a flooded-out library** has been advanced by a gift by Ragnwald Muller of the Corporate Technical Resources Staff. Hearing of an appeal from Wilkes College in Wilkes-

Barre, Pa., whose library suffered extensive damage in last June's floods, Muller donated his set of the Journal of the Health Physics Society, useful for students of the biological effects of radiation and related subjects. Saying "we are delighted with this offering," the college's library made it plain it would welcome similar gifts to its rebuilding program.

**Identifying General Electric with quality TV** continues to be a goal of the Company's corporate television programming activities. As an indicator of what is being accomplished, this season's Washington, D.C., preview of the "International Performance" series on Public Broadcasting Service programs drew many notables. Among them: famed singer Marian Anderson,



shown at right above with David W. Burke, manager of Public Relations Programs. In addition, General Electric's *Monogram* series of TV specials begins its fourth series December 18 with "Getting There First," a presentation of interesting aspects of U.S. history drawn from the works of Daniel J. Boorstin, Director of the National Museum of History and Technology of the Smithsonian Institution. The series will be seen on nearly 200 stations served by the Hughes Television Network.

**A citation for GE service to safety** was recently accepted in Chicago by Regional VP L. William Ballard. The citation recognized the Company as one of the Charter Members of the National Safety Council when it was formed 60 years ago. Said Council President Howard Pyle: "To have been an active participant in 60 years of safety progress as a member of the National Safety Council represents a commitment to safety that is worthy of every emphasis."

## New lift for GE jets

News that the prototype European A300B Airbus, powered by two General Electric CF6 high bypass turbofan engines, had made its successful maiden flight October 28 came as sweet music to the people of the Aircraft Engine Group, for it signalled further progress for the Company's burgeoning commercial jet engine business.

It closely followed another lift, the announcement last June that General Electric had supplied a CF6-50 mockup to the Boeing Company, interested in adapting the engine to its 747-300 wide-bodied jetliner. Boeing said it has launched a program to design a nacelle for the engine in preparation for a full flight test program that would pave the way for production of GE-powered 747's for air carriers who might prefer it over the 747's now using Pratt & Whitney engines.

Best news of all has been the success of the McDonnell Douglas DC-10 trijet, now completing its first full year in daily commercial service with four domestic airlines. The CF6-powered DC-10, known as the "good neighbor" airplane for its quietness of operation and virtually smokeless exhaust, is setting an example of performance and reliability that can only increase the chances of its selection by additional carriers. "Airline experience with the CF6 engine during the last year demonstrates that it can be handled and maintained with relative ease," says Brian H. Rowe, Vice President and general manager of the Commercial Engine Division.

**The CF6 engine stems from a decision** made several years ago to develop a family of engines using essentially the same "core," or gas generator section. The basic engine was known as the GE1 and the concept as the GE1 Building Block. Scaling the core engine up or down would produce a wide range of configurations suitable for either military or commercial aircraft needs.

First test of the concept came with the selection, in 1965, of the GE1/6—later known as the TF39—to power the Air Force's giant C-5 transport, a move that was to have far-reaching impact on today's wide-bodied commercial aircraft. The first high bypass turbofan engine to power any aircraft, the TF39 incorporated advanced cooling techniques that boosted the engine's thrust and efficiency, and it was miserly with fuel, a vital consideration to commercial carriers.

**Sensing a major opportunity,** the Aircraft Engine Group invested millions of dollars converting the TF39 into the most advanced commercial turbofan available. Great effort went into noise reduction and smoke elimination, with the result that the new engine—the CF6—is quieter than jet engines with half its power and there is virtually no visible exhaust.

The CF6 successes—selection by McDonnell Douglas, Airbus, and now Boeing—are building a solid platform under the Company's continuing thrust toward commercial jet engine leadership.

Despite the recent disappointing news that two major Japanese airlines had picked Lockheed's L-1011 and Boeing's 747SR, powered by competing engines, over the DC-10, the fact remains that 26 airlines around the world have ordered CF6-powered aircraft, and Rowe predicts "the decade of the 70's will see many additional carriers specifying this new, powerful, and efficient aircraft engine that will contribute to airline profitability."

**Rounding out the Company's commercial jet engine progress** is its growing leadership in the fast-growing business aviation market. The CJ610 powers the Lear Jet, the Commodore Jet, and the Hansa Jet. The CF700 turbofan powers the Fan Jet Falcon and the new Sabre 75A. More than half of all business jets in service today are powered by one or the other.

A third "business jet," the turbine-powered helicopter, had come on the scene in 1959, when the CT58 was FAA-certified for commercial service. CT58-powered helicopters now serve more than 40 operators around the world.

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*First flight of a new jet giant: the A300B Airbus, GE-powered, takes off in Toulouse, France.*



Aircraft Engine Business Group's commercial representative Ted J. Grossman is art director for the Group's publication *Jet Profiles*. To illustrate its jet story, the *Monogram* asked Ted to sketch this round-up of AEG's newsmakers. His drawings show: (upper left) GE-powered executive aircraft—the Lear Jet and Fan Jet Falcon; (above) the Sikorsky S-61 helicopter powered by the CT58 engine; (center) McDonnell Douglas DC-10 tri-jet series 10, with CF6-6D engines; (far left) Boeing 747, to test-flight GE CF6-50 engines in 1973; and (left) test stand representing AEG's programs to improve jets' endurance, thrust, noise reduction, and emission controls. ☐

# The energy issue: it's moving



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# higher among U.S. priorities

Energy, the stuff that makes the motors whir and the wheels turn and the lights go on, becomes an ever more serious subject of public debate. John Q. Citizen might well like to go on taking his energy supply for granted, as he did for generations, but the realization grows that he can no longer afford to, because energy problems feed so many other problems. The balance of payments, for instance. With the U.S. having to import more and more of its oil, facing the necessity of greatly boosting its imports of liquefied gas, energy has become a major factor in plunging the U.S. trade balance to its first deficits since 1893. Changes are plainly called for. The test for GE people is to try to make sure that the needed changes go in directions they see making sense for the country, the electrical industry, and the Company. This means, in essence, gaining public acceptance of the need for electrical growth, of giving a clearer green light to nuclear power, of being more understanding when electric utilities press for new plant sites or rate increases or new equity financing. Events of recent weeks, as surveyed in this special Monogram report, show the Company tackling the energy issue both in terms of spokesman-ship and on varied technical fronts.

## Enlisting the share owners

It stands to reason that General Electric's 530,000 share owners could be valuable allies in building new public attitudes toward the energy challenge.

That was plainly uppermost in the mind of President Reginald H. Jones when he arose, in his capacity as the CEO member responsible for the Company's businesses with utilities, to address the share owners attending the 1972 Information Meeting October 10 in Denver.

Eschewing any easy run-through of interesting GE gadgetry for the utility trade, Jones put it straight to the share owner audience. "You have bet on" the capability of electrical technology "to produce the energy this nation needs in



Reg Jones to the share owners:  
"You've bet on electrical technology."

ways that have minimal harmful effect on the environment."

His statement was made, he emphasized, "with full awareness of the fact that not everybody agrees with it." This awareness didn't deter him from stating the case that "to clean the air and waters, to recycle materials and dispose of solid wastes, to help solve urban problems, and to help bring the poor and disadvantaged closer to the high standards of living enjoyed by most of our citizens will require more—not less—electrical energy."

He cited an unusual indicator of electricity's increasing role in environmental protection: "The fact is that of several hundred environmental schemes presented to the Patent Office in the last few years, fully half depend for their success on electricity."

In view of the strength of the environmental movement in the U.S., he described as "providential" the Company's developments in gas turbine and boiling water reactor technology. "Together, they offer what are unquestionably the best present alternatives for meeting increasing demands for electricity with minimum unfavorable impact on the environment."

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New on energy's technological front is Nuclear Energy Division's Nuclenet 1000—control console for a nuclear power plant, pictured at left and on the cover. Multi-exposure cover photo shows a main benefit of the system: one operator can quickly scan, on ten cathode-ray tubes, more information than was previously obtained from hundreds of meters. Result: the operator can respond more quickly to changing plant conditions than he could with previous control systems.

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## ENERGY (continued)

He warned the share owners that the result of anti-energy actions could be a self-induced energy shortage: "Court decisions have been made, agencies have been established, and regulations are being considered which are or could be harmful to society by introducing an artificial scarcity of electricity. Electrical energy is like oxygen in the functioning of our economy. Its availability in quantities cannot be arrested or postponed. We simply cannot hold our breaths and turn blue."

One indication that the share owners got the message came in the question-and-answer period. "There is every indication that electric utilities will need vast amounts of new capital in order to meet their expansion requirements," a share owner wrote. "Do you see this as a major problem? Won't this mean significant increases in the rates utilities charge their customers?"

Reg Jones agreed: it's a very real problem. "The only hope the utilities have to raise the kinds of funds needed is improvement in their rate structure and rate level," he said, "because they must improve their price-earnings ratios in order to have access to equity markets and also to have the interest coverage needed for major debt securities."

### Informing the Board

October is normally a time when General Electric's Board of Directors travel to a GE facility for a plant tour. This year they, instead, assembled in a Denver meeting room to spend a morning reviewing the energy issue with managers from the Power Generation Business Group.

Led by VP and Group Executive Thomas O. Paine, the Group obliged with a survey of the energy challenge that was worldwide in scope and that extended in time from the distant past to the faraway future.

The net effect was an in-depth documentation of trends making clear that the energy future has to go toward electrical in general and nuclear in particular.

A key factor in nuclear's favor, the Directors heard, is the inevitable upward pressure on costs and availability of fossil fuels. The need to import, to reach into less accessible resources, and to meet increasingly stringent environmental standards will put constantly higher price tags on these energy fuels.

Utilities' recognition of the trends is reflected in ascending order rates for nuclear plants. The late-Sixties' dip in nuclear orders, brought on in part by regulatory uncertainties, has been turned around and once again the utilities are "going nuclear."

Interesting to the Board was the Group's analysis of the interplay of nuclear energy and gas turbines in recent years.

When literally millions of kilowatts of nuclear capacity were kept from coming on line as scheduled, utilities swung massively to gas turbines for fast, reliable generating capacity. Gas turbine installations exceeded 20 million kilowatts.

Now, with the logjam of nuclear facilities beginning to break, does this mean leaner days for gas turbines?

Not at all, the Group's leaders believe. Into the power picture has come a new contender—the combined-cycle plant that utilizes both steam and gas turbines. Combinations such as General Electric's STAG (STeam And Gas) system,



Tom Paine handles Directors' questions.

using the exhaust heat from gas turbines to help produce steam for the steam units, promise advantages both in environmental protection and in plant efficiencies. Utilities have begun to respond by stepping up orders for combined-cycle systems.

Prospects are thus bright for both nuclear and STAG plants.

The Board learned that utilities' acceptance of the Company's new BWR/6 reactor is enabling the Nuclear Energy Division to compete strongly for nuclear system orders in 1972.

Another favorable element in the NED outlook is the completion this year of the last of the turnkey projects, closing an era of major technological and financial commitment to help the fledgling nuclear industry get underway.

The nuclear growth potential is such, NED VP George J. Stathakis told the Board, that during the 1980's the U.S. will reach the point where kilowatts from nuclear generating plants will equal today's total installed capacity from all sources.

### Answers on nuclear safety

Intervenors—the word coming increasingly into use to describe the opponents of nuclear power—have lately been shifting the main burden of their attack. Much less is being made of claims about nuclear plant radiation. Much more is being made of the safety of the plants and the adequacy of their "fail-safe" systems. Here are answers from A. Philip Bray, Manager of Ap-

Applications Engineering for the Nuclear Energy Division.

#### Mr. Bray, why has the radiation issue subsided?

I believe the main reason is the increasing level of public understanding about the total radiation story. The public is no longer buying the claims that radiation levels emanating from nuclear power plants are excessive. Through the industry's education programs, the majority of people now understand that radiation is not a "new thing" and that companies like GE are perfecting nuclear plant designs so that if there is any radiation from a plant at all it's only a trivial amount relative to what we receive each day from nature.

#### So now the issue is reactor safety?

Yes. Now that intervenors' claims of excessive normal release are not being accepted they are switching to claims about excessive radiation levels due to reactor plant accidents. So we have the task of assuring the public that claims in this area are just as groundless. But this assignment is more difficult for at least two key reasons. First, the industry's own safety consciousness and safety record—our programs for designing against the possibility of anything going wrong—are being used as spurious evidence that we *expect* trouble. Second, we're defending against events that have never happened—that we feel won't *ever* happen—so it's hard to show the statistics that prove our case. How do we defend against the claim that we have no experience because these systems have never been required to operate? We at GE have thoroughly analyzed the appropriateness of the protective systems we provide and then have thoroughly tested these systems to confirm it.

#### What sort of reactor incident is receiving attention from the intervenors?

The one major incident which is receiving the limelight is the so-called LOCA, the hypothetical loss-of-coolant accident. This refers to the remote possibility of a nuclear plant suddenly losing the water supply used to cool its reactor core. The truth is that the design of GE's BWR, as well as competitor reactors, makes it virtually impossible for such an incident to occur. But here, as in all aspects of nuclear plant operation, there are many back-up protective systems. These are called ECCS, for Emergency Core Cooling Systems. If any of a plant's monitors should determine that a reactor was losing

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NED's Bray talks about nuclear safety.

## ENERGY (continued)

its normal coolant, the ECCS of GE's BWR would automatically spray the reactor core with water from above while also reflooding it from below—thus assuring that the reactor always maintains a cooled condition. For years we have tested these systems on a full-scale basis in every conceivable way—and they work. The critics also raise questions as to whether the fuel bundles in a reactor core wouldn't disintegrate with a heat build-up. Here again we've taken the bundles to power levels higher than could be imagined in actual operations—and they still maintain their integrity.

### **So you feel these charges are unfounded?**

Yes, I do. We can expect opponents to continue to play on the natural fears associated with nuclear technology's origins. We must work unrelentingly to show the public that there is simply no possibility of a nuclear power plant "exploding." In a nuclear bomb the fissionable material must be pure and concentrated. But in a nuclear reactor it is diluted. It can't, under any stretch of rational projection, build up that kind of explosive force. And the industry has invested in safeguards plus extra, redundant protective systems to guard against even the most minor sort of incidents. Safety has been a prime consideration of this industry from the start—and it always will be.

### **What recent contributions has GE made in terms of nuclear safety?**

Our new line of BWR/6 boiling water reactors is an important example. Nuclear Energy Division's conservative approach in the past has enabled us to stay well below the ceilings on safety set by the AEC. The BWR/6 improves on this performance by increasing all safety margins associated with the AEC's limits. Four independent emergency core cooling systems are provided—more than enough to meet any eventuality. And the BWR/6's reliability and ease of maintenance are enhanced by the fact that it has fewer components than competitive designs. In my eye it's the thoroughbred among today's reactors.

## **In HVDC, a world first**

A high point for the combined technologies of Canadian GE and General Electric came recently in a remote edge of New Brunswick. The Province's Premier and the Chairman of the Board of Canadian General Electric pressed pushbuttons that officially placed the Eel River

High-Voltage DC Converter Station into operation.

Premier Richard B. Hatfield hailed the moment as a "triumph in technological progress because it is a first in the world—the first all-solid-state HVDC converter station."

The station solved a tricky technical problem for Canada. The New Brunswick Electric Power Commission wanted to tap into the great new flow of pollution-free hydro power coming down from Labrador's remote Churchill Falls generators. But its system was out of sync with the Hydro-Quebec system bringing power out of the Far North. The problem could be solved by cumbersome mercury-arc rectifiers—like kingsize vacuum tubes. But wasn't it time to give kingsize solid-state technology a try?

Canadian GE said yes. Solid-state converters developed by General Electric's Switchgear Equipment Business Division in Philadelphia for steel-mill applications could be adapted to a Canadian interconnection. CGE won the contract.

The ceremony at Eel River marked not only a technical success but also a strong performance in terms of timing. The official opening took place just 39 months after the contract was let—3½ months ahead of what the customer admitted to be "a very tight schedule."

In his remarks Canadian GE's Chairman, Walter G. Ward, pointed out another plus: the Eel River Station is designed to serve as a research facility even as it performs as a fully operational station.

Ward directed attention toward other large projects for which Eel River could be a forerunner. The country's "large power systems, the abundance of hydro-electric energy, our unique nuclear technology, our vast distances, all combine," he said, "to make Canada a vast built-in laboratory for the application of important electrical technologies."

It's a laboratory in which HVDC can play an enlarging role. For as proven out at Eel River, HVDC is ready to take on other jobs as well as interconnect adjacent power systems. It can transmit power economically over those vast distances. It can deliver more power in overhead lines than in similar-sized a-c lines. And in transmitting bulk power it can plunge underground or underwater.

Said Ward in summary: "This project is an excellent example of a long established U.S. manufacturing affiliate integrating and bringing to bear the basic research in technology of



**New Brunswick Premier Hatfield and Canadian GE Chairman Ward push the buttons that get the Eel River HVDC Converter Station officially under-way. Center: NB Power's G. E. McInerney.**

its parent company and combining it effectively with its own key technical and manufacturing competence to produce major benefits to Canada."

### **Underground gets a "phase lift"**

Utilities looking for ways to make their distribution system less conspicuous, thus more compatible with today's higher environmental standards, are getting a helping hand in Hickory, N.C.

There GE's Distribution Transformer Products Department recently showed off its expanded and refurbished Underground Distribution Center.

What the Center does, in a Hickory nutshell, is offer the utility engineer or purchasing decision-maker a full range of the options available for distributing power underground instead of by poles and wires.

Up till now the Center, opened in 1971, displayed only residential power distribution. Now, as the result of what DTPD calls its "phase lift,"



**At UD Center: new ways to go underground.**

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## ENERGY (continued)

the Center also exhibits products for commercial applications such as in shopping centers, large downtown buildings, and motel complexes.

At the Center the visitor sees "live" models of three main types of products: the "pad-mounted" transformer that sticks up above the ground's surface, the vault-type transformer, and the direct-buried unit.

Pad-mounted transformers were the first to cash in on the big breakthrough of the mid-60's that made underground distribution feasible: the development of cross-linked polyethylene cable that could be buried directly in the ground. Expected to be merely stepping stones to the total underground units, the pad mount has proved to be an unexpectedly durable competitor. It has a cost advantage over vault-type units and is simpler from an operating standpoint. Also, GE engineers have successfully reduced the units' above-ground height from 40 inches to 34 and now to 24. It can be hidden in a clump of shrubbery.

General Electric has led in the development of the "transformer of the future"—the direct-buried unit. It can be seen at the Center lying four feet below ground with only the cables accessible through a junction box on the surface.

The swing to underground is accentuated by the industry-wide figures: in 1963 only 2% of distribution capacity going in was underground. This year the share is 20% and climbing. By 1975, DTPD expects, it will be 40%.

Hickory's Center, playing to an average of two groups of utility visitors a week, is both a putdown to unsightly distribution and a buildup for General Electric's leadership role in UD technology.

### Power for superships

An interesting offshoot of General Electric's energy technology is in steam turbine propulsion for ships.

A dramatic moment for this GE-pioneered technology came on a drizzling autumn afternoon recently when the newest supership of the American merchant marine slipped into New York harbor to complete its maiden voyage.

The hooting of horns, blaring of sirens, and water jets from fireboats were both a welcome and a celebration. For the 946-foot Sea-Land *Galloway* had made the crossing from Rotterdam to New York in 5 days, 6 hours, and 34 minutes at an average speed of 29.59 knots—3 knots faster than the existing record.

Statistics, like everything else about this supership, are on a grand scale. She's: longer than three football fields laid end to end; able to carry more than a thousand 35- and 40-foot containers (placed in a line they'd reach 7½ miles); and faster than any commercial vessel afloat, with a top speed of 33 knots.

But what really impresses the visitor with the ship's scope is to take the elevator at the level of the 100-foot-wide carpeted and air-conditioned bridge and descend some eight stories to the engine room.

There one finds the flock of nameplates identifying the extensive GE equipment that helps make the *Galloway* the ship she is—two sets of marine steam turbines and gears generating 120,000 shaft horsepower, smaller turbine-generator sets to supply onboard electric power, standby and emergency generators, auxiliary motors, and other controls and switchgear components.

Unique as she is today, the *Galloway* is just the first of what will be, when completed in 1973, a fleet of eight mammoth containerships built by Sea-Land Service, Inc., at an estimated cost of \$400 million. GE marine steam propulsion equipment will power all eight.


These ships, which will transport cargo sealed in reusable boxcar-like containers across the Atlantic in 4½ days and the Pacific in 5½, offer the shipper a competitive alternate to air freight. At the same time, they're American flagships and as such are helping the nation regain some of the nautical competitive steam she hasn't had since the romantic sailing days of the Yankee clipper ships.

### Making gas from coal

Meanwhile, back at the lab, GE scientists continue to probe for new developments to help solve the energy challenge.

One line of study by the Research and Development Center aims at relieving the shortage of natural gas by more economical and efficient techniques for converting coal into gas.

The Center is already successfully operating a "feasibility unit" using ¼-ton of coal per day. Next year's plan: a demonstration gasifier capable of handling ¼-ton per hour. Beyond that: a prototype plant with a full-scale gasifier.

One use of the gas: to fuel STAG systems. 

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**GE-powered Galloway: so big you take an 8-story elevator from bridge to engine room.**



## RETIREMENT: A TIME FOR RENEWAL

News from pensioners indicates that for many General Electric people retirement is a time to try new things, cut new furrows. Here are examples of individuals who have found a new fulfillment in directions as diverse as forming a new camp for handicapped children and carving a new career in creative writing.

**Wesley Lynds**, former toolmaker in the Medium Steam Turbine Generator Products Department at Lynn, has kept his home workshop humming since his retirement in 1967. Several years ago, he built a solid walnut grandfather clock for his home, and the result was such a handsome piece of furniture that what began as a hobby has turned into a second career.

Lynds buys the clock works from West Germany and cuts and finishes the cabinets himself. "I make my clocks like I made tools for General Electric," he says. So far, he has built five grandfather clocks, 14 grandmother clocks, and several Westminster chime "Plymouth Wag on Wall" clocks, named for the pendulum swing.



In addition to his hobby-turned-profession, Lynds and his wife Violet have found time to travel through the United States and Canada. "I'm very much enjoying my retirement," he says. "I've never had an idle day, and there's lots to be thankful for."

**Bertha Lloyd** took an early retirement from the Research and Development Center in 1966 and set out to help the less fortunate enjoy life. A volunteer at the Glendale Home for the Aged, she did books for the blind for three years. During the last two years she has performed voluntary work at Ellis Hospital's Psychiatric Unit as drama and discussion group leader.

Bertha—"Bert to my friends"—also serves on the Executive Committee of Schenectady Civic

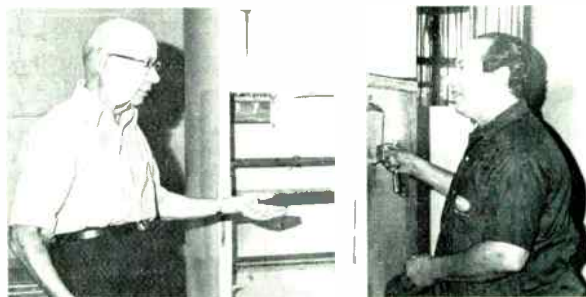


Players, Inc. "We own our own theatre and put on five plays and several workshops each season," she says. Among roles she has played: Martha Brewster in *Arsenic and Old Lace*; and Mrs. Bradman in *Blithe Spirit*. In the 1968-69 season, she directed *Barefoot in the Park*.

For a change of scenery, Bert and her sister Gwen, also retired from General Electric, take time each year to visit the Shakespeare Theatre at Stratford in Ontario, Canada. And three years ago, they topped off a three-month trip to Europe and their hometown in North Wales with a theatre tour of London.

**John Miller** retired last year as manager of Customer Relations for the Product Service Department at Louisville, but he didn't rest long. Within a month, he and his wife Mary Lou were on their way to Panama City, where he had taken a three-month assignment as a volunteer for the International Executive Service Corps to advise a television and appliance distributor.

"The IESC is a nonprofit organization," Miller explains, "based on the principle that retired American businessmen can help developing countries by counselling their businesses on





problems we've already encountered. A side benefit is that as these businesses prosper, we're contributing to the economy of the developing nations and helping to create markets for U.S. businesses."

Miller has now completed two assignments in Panama for IESC and expects to return there in January. Meanwhile, he and his wife are on an assignment in Managua, Nicaragua. "It's gratifying," says Miller, "to be able to use my experience and see the world at the same time."

**Walter Booth**, shown with Bethune-Cookman College President Dr. Richard V. Moore and Student Government President Broderick McKinney, finds that retirement lets him give more attention to an interest that began while he was manager of Employee Relations for the Apollo Support Department at Daytona Beach. He retired six years ago after 40 years with General Electric.

A member of the B-CC Executive Board and past president of the Board of Counselors, Booth says, "Under Dr. Moore's leadership, a new and dynamic Bethune-Cookman College has emerged. In 10 years I have observed the addition of eight fine new buildings, a strengthening of the faculty and restructuring of academic programs, and—best of all—the movement of more than 3,000 young black men and women into the business world, able to establish themselves in their chosen fields."



He adds that his involvement—"a happy and rewarding experience"—has shown that "a responsive community's support of education for these young people, both financial and moral, is the most productive route to the attainment of equal and lasting opportunity."

**David McDaniel** turned full-time to his hobby of creative writing when he retired last year as traffic distribution specialist with the Nuclear Energy Division at San Jose. With poems recently published in half a dozen magazines, he



is at work on three novels and several articles. He still finds time to teach classes in creative writing and poetry at Villa Montalvo in Saratoga (above) and to conduct a "writers' workshop and poets' corner" at his San Jose home.

A lifelong bibliophile, McDaniel received an honorable mention in the competition for the 1971 Gerald L. Phillippe Awards for Distinguished Public Service for his 1970 donation to the San Jose Public Library of his collection of 13,000 books, 12,000 pieces of music, 5,000 phonograph records, and 450 autographs of famous persons. The City Council of San Jose promptly named a community room in the library in his honor.

McDaniel says the collection, worth more than \$100,000, "just grew over the years. I had decided it would be fun to give a collection to the library, and it became sort of a dream with me."

**Charles Miller** (below at right) retired as Regional Vice President of General Electric's East Central Region in 1969 and immediately set out to accomplish a long-held dream, the establishment of a camp for handicapped children in the Missouri Ozarks. To that end, Miller and his wife Alice donated a 35-acre site with 400 feet of lake front on Bogue Bay, Lake of the Ozarks, land they considered "a perfect spot for a camp."

Miller then organized a foundation to raise funds for the necessary buildings, and the Missouri Jaycees accepted responsibility for the planning, design, and construction, making



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## RENEWAL (continued)

"Camp Wonderland" their number one project. The camp is now a reality, with five buildings and a shelter house, all specially designed for children crippled or confined to wheelchairs.

"Since June, we've had several groups of retarded and handicapped youngsters, each for a week at a time," says Miller, who terms the first camping season "a tremendous success." Currently limited to 24 campers at a time, the camp will, within five years, accommodate several times that number.

**Leslie Moyer** retired from his position as a Lamp Division advertising manager at Nela Park in 1964, but not in retreat to idleness.

For the Cleveland Heights Rotary Club—he is past president—he initiated a Junior Achievement group for physically handicapped children. He serves on the Board of the Society of Crippled Children and is a 26-year member of the Cleveland Advertising Club. And he was president for three years of the 165-member Cleveland Senior Council, a group of retired



executives and professionals who volunteer their services as business advisors.

Last fall, Moyer acted as team leader for a group of six young men from the Cleveland area on an eight-week tour of India, part of a reciprocal study exchange program conducted by Rotary. "These goodwill trips provide a person-to-person opportunity to really study another country," Moyer says.

Since his return, Moyer has made countless slide presentations on his trip. His objective: "to promote a better understanding and attitude among the peoples of the world."

**G. Fred Lincks**, who retired as standards engineer with the former Distribution Protective Equipment at Pittsfield in 1966, recently was honored with the "Service-Above-Self Award" given annually by the Rotary Club.

As chairman of the landscaping committee for Berkshire Community College, now in its first full year of operation, Lincks has supervised



the planting of hundreds of trees and shrubs to beautify the campus.


Service is a habit for Lincks. A YMCA worker for more than 50 years, he has served on the Board for 37 years, is a member of the finance, personnel, and youth committees, and chairs the Y's long-range planning committee.

Of his civic activities, Lincks says: "I personally feel this is what everybody should be doing instead of asking the government to gimme, gimme, gimme. I've been doing volunteer work all my life."

**Dr. William D. Coolidge**, retired since 1944 as Vice President and director of research, recently had a chance to review 60 years of technology in X-ray with Julien R. Charlier, Vice President of General Electric's Medical Systems Business Division, at the Coolidge home in Schenectady.

Dr. Coolidge, who celebrated his 99th birthday on October 23, is perhaps most renowned for his development of the first successful high-vacuum X-ray tube, the seed that grew into the Company's medical systems business.



Dr. Coolidge continues to be an active member of the nation's scientific community. Just last month he received the "Power-Life Award" from the Power Engineering Society of the Institute of Electrical and Electronics Engineers "in recognition of his contributions to the science of X-rays, the medical profession, and the welfare of humanity." 

# ORGANIZATION CHANGES

## Group structure realigned

In a realignment of two Groups, effective December 1, 1972, the Construction Industries Group is discontinued and a Special Systems and Products Group established. Dr. Thomas A. Vanderslice, Vice President and former general manager of the Electronic Components Business Division, has been assigned responsibility for the new Group.

The Special Systems and Products Group includes 35,000 employees and the following components: Construction Materials Division, Communication Systems Business Division, General Electric Supply Company Business Division, Information Services Business Division, Transportation Systems Business Division, and the Group Strategic Planning and Review Operation.

Other changes affected the organization structure of the Industrial Group. Robert B. Kurtz, who had been Vice President and Group Executive of the Construction Industries Group, has been assigned Group Executive responsibility for the Industrial Group. The Group includes: AC Motor and Generator Business Division, Apparatus Service Business Division, Automation Business Division, Contractor Equipment Business Division, Apparatus Distribution Sales Division, Industrial Sales Division, and the Group Strategic Planning and Review Operation.

In a related move, the name of the International Group has been changed to International and Canadian Group, with Edward E. Hood, Jr. continuing as Vice President and Group Executive. The Vice President and Group Executive—International and Canadian Group has the responsibility to represent and act on behalf of the General Electric Company with respect to the Company's interest in, and relations with, the Canadian General Electric Com-



*New Group Executive:*  
Dr. Thomas A. Vanderslice

pany Limited. Walter G. Ward continues as Chairman of the Board and Chief Executive Officer of CGE.

**Additional organization changes include the following:**

### CORPORATE

A Corporate Business Development Staff component is established in the Corporate Executive Staff, and Phillips S. Peter is appointed Staff Executive.

### AEROSPACE BUSINESS GROUP

Archie S. Riggins, *Manager—Space Financial and Administration Operation.*

### COMPONENTS AND MATERIALS GROUP

George B. Farnsworth, *General Manager—Electronic Components Business Division*

### INDUSTRIAL GROUP

Ralph B. Glotzbach, *Vice President, appointed General Manager—Apparatus Distribution Sales Division (formerly Agency and Distributor Sales Division).*

Howard F. McCullough, *Vice President, assigned responsibility for Special Study Projects—Industrial Group.*

Maurice C. Sublette, *appointed Executive Vice President and Representative Director—Drive System Company, Ltd.*

### POWER GENERATION BUSINESS GROUP

Clement E. Sutton, Jr., *Vice President—Group Operational Planning.*

George H. Schofield, *General Manager—Medium Steam Turbine-Generator Products Department.*

Robert D. Desrochers, *Manager—Steam Turbine-Generator Financial Operation.*

### SPECIAL SYSTEMS AND PRODUCTS GROUP

Verner S. Cooper, *General Manager—Construction Materials Division.*

Kertis P. Kuhlman, *General Manager—General Electric Supply Company Business Division.*

## PRODUCTS



*New families of space-age cutting tools raise the question:*

### Diamond and Borazon<sup>†</sup> CBN— what's the difference?

Is General Electric offering, to the market for super-abrasives, two competing lines of products as it does to major appliance customers?

The answer is no. The Specialty Materials Department does have two products—Man-Made<sup>†</sup> diamond, commercially introduced in 1957, and Borazon<sup>†</sup> CBN (cubic boron nitride) introduced in 1969. But they're partners, not competitors; indeed they complement each other in grinding a wide variety of materials.

These super-abrasives are "the hardest materials known to man." Diamond is the harder and can do virtually any cutting task, but from an economical standpoint is not as efficient as Borazon<sup>†</sup> CBN in the grinding of ferrous materials.

Diamond reigns supreme in grinding cemented carbides, glass, ceramics, stone, quartz, and other similar materials.

Borazon CBN consistently outperforms other abrasives, including diamond, in the grinding of hardened high-speed tool and die steels, alloyed steels and cobalt materials.

A further new development by the R&D Center promises new potentials for both abrasives. Announced as "a major breakthrough," the new large-size cutting tool inserts resulting from sintering thousands of diamond or Borazon<sup>†</sup> CBN crystals into Carbofoyl<sup>®</sup> cemented carbide bases are expected to provide "dramatic" gains in productivity.



*Parts molded from new GENAL<sup>®</sup> development show how GE is...*

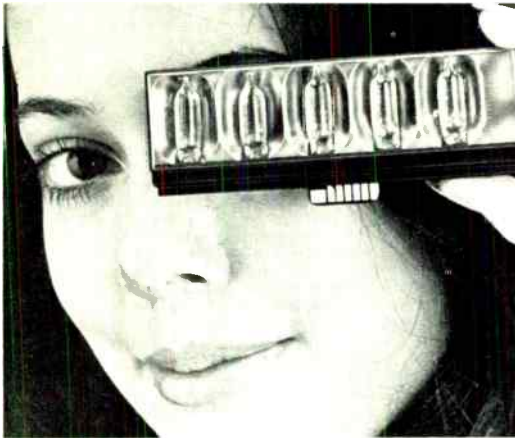
### Freeing phenolics from the asbestos hazard

Asbestos has long been used in phenolic plastics as an excellent insulating material. But it has recently come under close scrutiny as a potential health hazard by the Occupational Health and Safety Administration.

Now General Electric's Plastics Department has announced the removal of asbestos from all grades of its phenolic molding compounds by December 31, 1972.

"While General Electric's manufacturing facility meets with current OSHA requirements," explains Kenneth R. Barr, manager of the Phenolic Products Section, "we felt strongly about removing a potential health hazard from our material. So, we made the technology available to develop a replacement. By replacing asbestos, we can reduce significantly any danger to our customers," he said. The new materials are labeled "GENAL-E," the E a symbol of the "Ecological Revolution."

**A second plastics innovation** recently announced was VALOX<sup>®</sup> foamable resin—the newest member of GE's full line of engineering plastics. In standard form, VALOX resins permit a wide number of market applications including appliances, electronics, automotive, communications, and hardware. The foamable grade is expected to penetrate similar markets in those applications where larger part size, smaller quantity runs, or design make injection molding economically impractical.



*F-F-F-F-Flash! New 10-bulb photoflash unit shows how at GE . . .*

## Innovations come to light

Will cameras become so brainy they will eliminate the need for a photographer? Innovations in camera art are trending that way, and two new General Electric developments give an extra push.

The combined developments from GE's Lamp Business Division are a new rapid-fire "FlashBar 10" photoflash and a GE-patented "memory" circuit that controls it.

The new photoflash unit developed by the Photo Lamp Department contains 10 flash-bulbs, five per side. The one-ounce flash cartridge was designed especially for the Polaroid Corporation's new SX-70 camera with its 10-exposure film. New design of camera and automated GE flash system make it possible to fire all 10 flashes in less than 30 seconds.

Of the memory circuit, Robert P. Burrows, Photo Lamp's GM, explains that "this circuit in the camera eliminates misfires by skipping over bulbs already flashed and automatically locating the next unflashed bulb. Even when partly used, FlashBar 10 can be removed and later replaced on the camera."

Burrows adds that "unlike four-shot flash-cubes the new GE FlashBar 10 has no mechanical parts. Nothing turns. Nothing moves—except electrons. With its large number of flashes in a small and highly pocketable package, the FlashBar offers a new concept in convenience for the user."



*Shelbyville's new carburetor heaters are another example showing how . . .*

## GE further broadens its auto input

To the Editor:

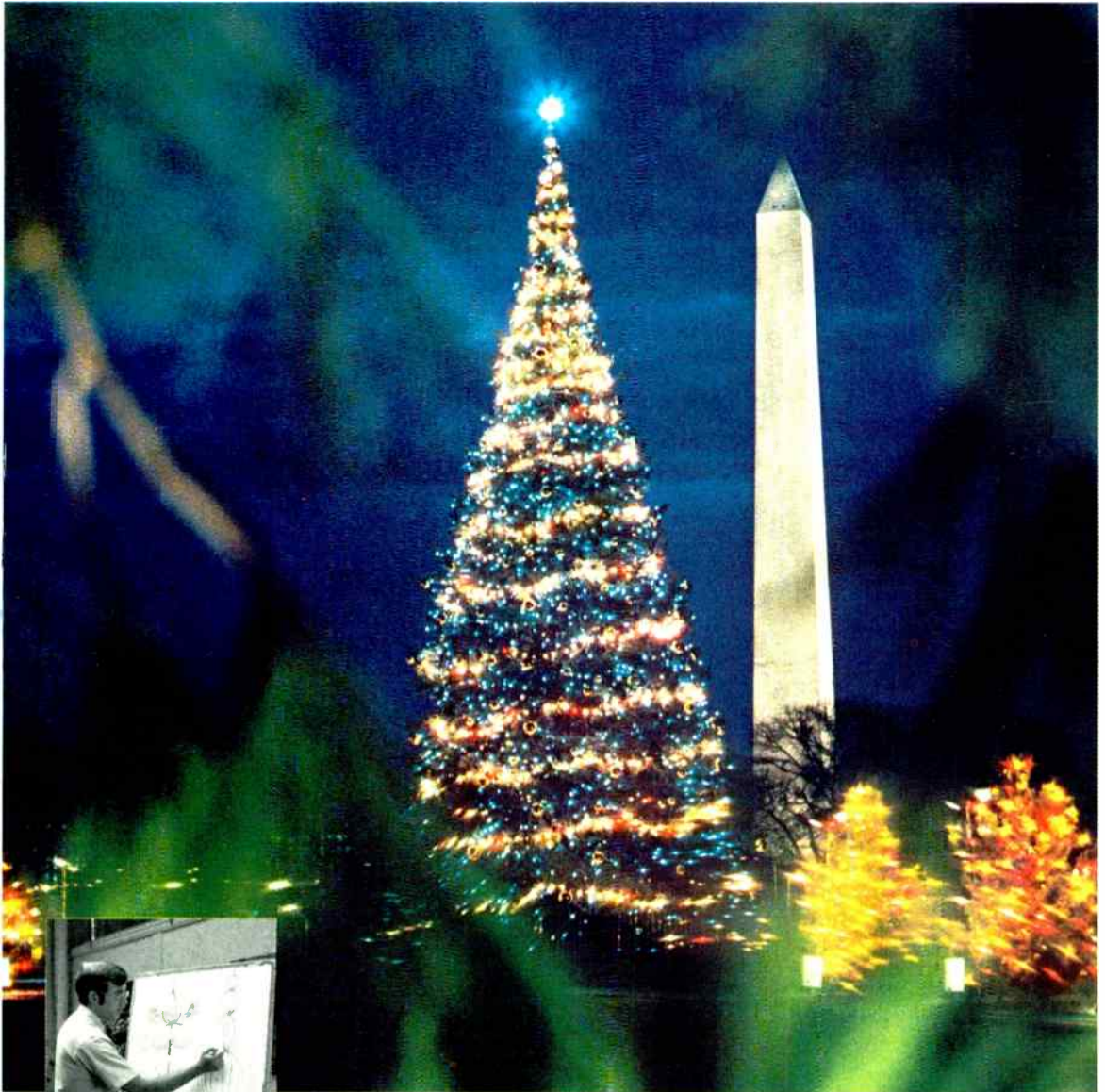
I read with great interest the article titled "1973 Autos: General Electric Broadens Its Input" in the September-October *Monogram*. Realizing the difficulty of collecting material for such an article, I would like to call your attention to a General Electric automotive application you neglected to mention.

Chrysler Corporation now uses a small sheath heater on their carburetor. The heater goes around the spring on the automatic choke and under certain conditions causes the choke to change over earlier from the rich mixture as part of the package to help the car meet the 1973 anti-pollution standards.

These heaters, specified by Chrysler and purchased by their carburetor manufacturers from General Electric here in Shelbyville, appear on all 1973 passenger cars built by Chrysler Corporation. We have a special line set up in our plant that produces many thousands of these heaters each week.

Would appreciate your adding our name to the list of Departments furnishing components to the automobile industry for 1973.

**C. W. Wertz**  
*Sales and Application Specialist  
Industrial Heating Business Department  
Shelbyville, Indiana*



**Yuletide Greetings:** More than 8,000 General Electric lamps festoon the National Christmas Tree—focal point of the annual Pageant of Peace in Washington, D.C. Every year, GE donates the planning, lighting, and installation for the National and the 58 State and Territory Trees. President Nixon will officially open the Pageant at 5:30 p.m., December 15. At left, GE lighting specialist John Suter, responsible for designing the towering tree, works on rough sketches of several possibilities for the top ornament.