



GENERAL ELECTRIC

monogram

NOVEMBER-DECEMBER 1975

ACHIEVEMENT

SECURITY

Recognition

WORK

Responsibility

SALARY

ENVIRONMENT



WHAT'S YOUR STRONGEST MOTIVATOR?

Managing motivation

GE Motivation Workshops offer fresh answers to 'What turns people on?'

When it comes to being highly productive on the job, to feeling a sense of success and achievement, to being a real contributor, what do you really believe about yourself and others?

Does money account for it—the drive to draw a bigger paycheck? Is it the competitive instinct—the urge to win over others? Is fear the principal factor or does motivation come from the promise of reward? Is it just ego—the desire for recognition, approval, status? Or is it the sheer enjoyment of being part of a busy, cooperative, professional team?

These are questions to which behavioral scientists have been addressing themselves for years.

Yet, oddly enough, few of their findings and theories have been effectively applied by man-

agers who have learned their managing skills from bosses or from managerial courses that have tended to stress *techniques*—rather than a fundamental understanding of the manager's role in the human resources area.

Now at the Company's Management Development Institute something new is being offered: an approach to managerial education that hinges far less on what the manager can do to others than on what the manager can help others do for themselves.

This is one of the watershed answers that have come out of behavioral sciences: motivation in each of us is a very personal thing; we tend to "turn ourselves on" rather than be forced into it by somebody else.

The idea behind GE's new Motivation Work-

November-December 1975



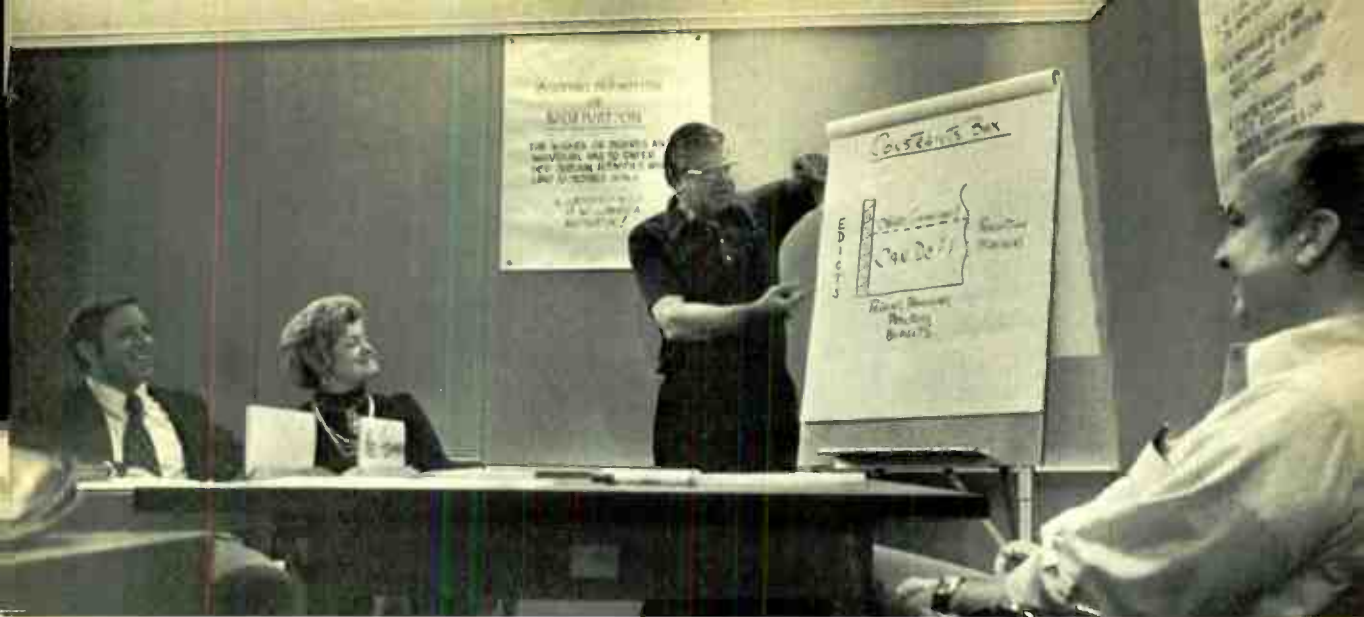
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Contents

THE COMPANY	2-13
Managing motivation / Moving up on issues / Guidance for high-schoolers / Preserving GE history / Monographs	
THE BUSINESSES	14-21
New directions for GE plastics / Getting out the tough oil	
PEOPLE	22-27
Fight against alcoholism / Consumer coordinators	
PRODUCTS	28-29
Try-out as Superman / Product briefs	
PERSPECTIVES	30-31
VP Marion Kellogg on performance appraisals / For readers only	

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How to expand the dimensions of the “constraints box,” one of the concepts in Crotonville’s successful Motivation Workshops, is demonstrated by Ned Herrmann. Watching at right: Robert L. Harper, co-leader and principal course designer.

shops is that, if this is so, if people tend to be inner- rather than outer-motivated, then the main goal of the manager—and of the courses to help him manage more effectively—should be to build a working climate that encourages self-motivation.

As Senior VP Hershner Cross told the GE Management Conference earlier this year:

“This Company has always had a number of managers who could create a climate for motivation. Why shouldn’t we all try to gain some of their insights or their skills in capturing and communicating the excitement of identifying with a great business enterprise, setting challenging goals and measuring results?”

A significant step toward improving managerial effectiveness in the human resources area has been Crotonville’s Motivation Workshop, which in its 30-month history has had 1600 participants in the three-day courses devoted to understanding basic approaches to motivation.

“A fundamental emphasis of the workshop is the role of the manager in creating a kind of climate where the individual employee wants to achieve organizational goals while at the same time fulfilling personal needs,” explains MW leader W. E. “Ned” Herrmann, manager of Crotonville’s Management Education Operation.

Creating a positive climate, according to Herrmann, assumes that employee needs and those of the organization don’t automatically join, and that it’s primarily the actions of the manager that help bring them together.

“This view of the manager’s role begins to develop after about a day in the workshop, and it’s understood that the manager has some powerful aids which must be understood and properly applied.” These are developed as:

- ▷ The work the manager gives or doesn’t give;
- ▷ The information shared or not shared;
- ▷ The rewards given or not given.

“What we’re doing, in a nutshell,” says Herrmann, “is introducing the manager to a view of the employee/manager relationship based upon well-established behavioral findings. We do this through an intensive format of discovery and participative learning. As a result of this format, the evidence supporting an alternative managerial approach is so persuasive that it’s highly likely that a manager will recognize many opportunities for applications back home.”

What distinguishes GE’s Motivation Workshops from other managerial courses? Herrmann cites specifics:

- ▷ The importance of the *manager* in setting the motivational climate for the component;
- ▷ Defining the manager’s role in the human resources area;
- ▷ Demonstrating in the classroom the climate required for application back on the job; and
- ▷ Reinforcing the organization’s climate through the participation of ‘families’ of managers from a single component.

(continued next page)

One major message has burned into the collective consciousness of most Motivation Workshop graduates: managers have a tremendous personal impact on their organizations—a fact of business life known by those with years of managerial experience.

“Many managers who once attributed the success of their components to others now realize that there is far greater significance in the impact of their own personal managerial approach,” reports Herrmann.

“We’ve learned that the tough problems managers have to deal with sometimes cause them to avoid the human resources part of their job, in favor of a challenging technical problem or marketing opportunity. Yet these ‘people problems’ can be dealt with very effectively with the everyday tools and techniques of behavioral sciences.

“What we try to do is to give the managerial participant a whole new set of options and alternate solutions.” As an example, he cites managers who once felt that salary was the sole means available to reward effective performance, but now have discovered other possibly more meaningful rewards such as a well-designed job, personal recognition for achievement and the opportunity for faster personal growth.

Managers who are equipped with an understanding of such new options and alternatives are much more capable of doing their own human resources management work—the kind of work that shouldn’t be assigned to employee relations or pushed up to the boss, says Herrmann.

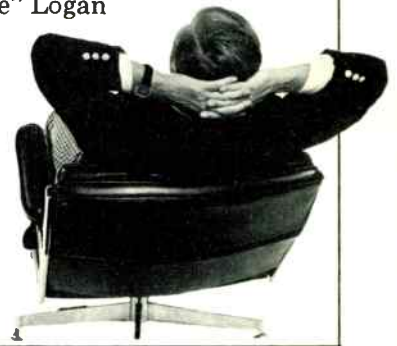
“The family approach—which means that all the managers in a component participate in the workshop in groups of about 20—provides the necessary understanding, reinforcement and supportive climate required for meaningful action to take place on the job.

“A unique twist to the Motivation Workshop has been the sharing of ‘action commitments’ by participants that get the manager going on needed motivational actions when back on the job,” Herrmann adds. “So far, we’ve had an outpouring of commitments from participants to date that we estimate will have a favorable impact on some 100,000 people in the Company.

“We’ve learned that managers can be ‘turned on’ in the human resources area, and that once given useful tools, techniques and skills, they will use them back on the job.”

Motivation Workshops: one participant’s experience

by Devere “Dee” Logan



Recently I returned from a three-day Motivation Workshop at Crotonville, and happily can report that the experience was sufficiently rewarding to motivate me to write about it. Admittedly, when I first heard that I was to attend, my feelings were cool. Would it be one of those avant-garde “group gropes,” with everyone turning themselves inside out and spilling their innermost feelings? I wasn’t quite ready for that.

The workshop turned out to be a pretty straightforward approach to understanding how people are motivated, and while its focus is on the role of the manager in the human resources area, my personal work is bringing me ample opportunity to apply the principles. As our Workshop leaders Ned Herrmann and Bob Harper told us opening night, the course deals with some of the basic theories of human behavior, but rather than treating them independently, it attempts to interconnect all of the fundamentals into an overview of the manager’s role.

What *does* make people tick? What “turns them on?” Why does one person excel on a job

while another does only enough to get by? For years, behavioral scientists have been gathering information on such questions, and today there exists enough understanding of motivation to bring about tremendous changes at work and at home if only we applied it to our own lives.

For openers, motivation in each of us is a very personal thing. We tend to “turn ourselves on” rather than be forced into it by somebody else. The old “carrot vs. stick” approach to motivation went out with high button shoes.

To understand motivation, we must recognize the needs that automatically come with membership in the human race. Each of us is need-oriented throughout our lives. We satisfy one and move on to another, a process continuing from cradle to grave. Basic of all needs are the physiological: food, air, water and sleep. A bit loftier on the scale are safety and security. At the top are what could be called growth needs: self-esteem, recognition and meaningfulness.

Admittedly, if your basic needs aren’t met—such as when you’re hungry—you couldn’t care less about your self-esteem. You *would* be motivated by an offer of a sizzling steak, however, rather than a bowling trophy. But once you eat the steak, your hunger need is satisfied and no longer motivates, but the desire to earn a bowling trophy might indeed motivate you.

How would this apply to a working environment? Consider an employee who is being paid a good wage, works in a comfortable office or factory, and doesn’t feel threatened by his boss. His basic physiological and safety needs are met, and therefore don’t motivate him. A raise in pay, surprisingly, probably wouldn’t motivate very much. So, what’s left as motivation? The social and egoistic needs such as recognition or achievement remain areas in which individuals would tend to “turn themselves on.”

This is quite a challenge. Traditionally, organizations—and that includes businesses—have concentrated on meeting the basic needs of their employees. Such motivators as competitive wage scales, vacation and hospitalization plans or life insurance have been used for years. Of course, when these basic needs are satisfied, they no longer motivate employees. The motivational vacuum that exists in many organizations can only be filled by alert managers who realize that higher level needs are waiting to be satisfied.

A big factor in getting employees to “turn

themselves on” is the “climate” of an office or a plant. All of us have been in areas where we could feel tension and hostility in the air. In others, an open, trusting, harmonious atmosphere was evident, and people seemed productively involved in their work. Our workshop studied impressive evidence showing that organizational climate affects employee performance. The individual who is motivated by achievement performs better than the person who is primarily concerned with avoiding failure.

Perhaps business climates often grow by default, the product of neglect by individuals completely absorbed by the demands of a competitive marketplace. Yet, for success and profit to accrue, *people* must be sufficiently motivated. Nothing happens without them. This vital human element is often the only distinguishing characteristic between two otherwise similar organizations.

How can we help others motivate themselves? The climate should be open, friendly and one of trust. Goals should be mutually set and understood, with a free flow of information adequate to the task. We should listen, remembering that people are individuals and have personal needs and goals. This uniqueness can be a productive force in an organization and be directed toward mutual benefit.

What about our assumptions? Are they sometimes negative and cynical rather than positive reinforcers of behavior? Attitudes and assumptions have an uncanny ability to make themselves known and thus influence behavior even when we don’t intend them to show. Do we fail to reward a good job or to give praise simply because of our expectation that people “are expected to do a good job?” Do we only make signs when things go wrong, so that we get the reputation for being a reclusive ogre?

The bottom line is simply this: if an organization is to reach its full potential, it will only be through highly-motivated people. They will undoubtedly be committed to achieving company goals, while also realizing personal satisfaction from their own work. This link-up between corporate and personal goals may be the area of richest potential for modern businesses seeking a competitive edge. It seems to me that the payoff for both the organization and the individuals motivated to “turn themselves on” can be tremendous. □

Moving up on the 'issues' front

GE officers urge action on tax reform, nuclear energy, acquainting Congressmen with the business world

"In times like these, the main problems facing management are actually external to the Company."

It's a theme that Chairman Reginald H. Jones has been reiterating. But when he faced an audience of General Electric share owners in San Francisco's Masonic Auditorium on October 28, he went further than merely propounding a thesis; in sales parlance, he "asked for the order" by selecting one specific problem area and asking share owners to take action in helping to solve it.

His choice of issue: the need for changes in U.S. tax policies. "The recovery," he said, "is going to be very slow and uncertain unless we are able to bring about some fundamental changes in governmental attitudes and policies affecting business."

Management has been doing its part, he told the share owners: "Your Company has been urging changes in national policy on issues that go all the way from energy to investment." But at the share owners' Information Meeting the General Electric Chairman limited his discussion to "one that should be of special interest to share owners—namely, the need for tax reform that will enable business to generate the funds it needs to invest in modernization and expansion."

He pictured Congress as continuing "tax policies that are heavily weighted against corporations and the savers and investors of America"—policies that, specifically, make it difficult for industry to generate profits. And profits, he reminded his listeners, are the source of the funds with which business improves productiv-

ity, invests in new technology and provides jobs for a growing labor force.

With profits declining, he said, "many of our industrial customers and suppliers have been drifting deeply into debt just to keep going, and all of American business is hard-pressed for capital." He told the share owners that "as investors, you will want to urge your representatives in Congress to:

- Make the 10% investment tax credit permanent, and perhaps increase it to 12%;
- Change depreciation rates to match the real replacement cost of plant and equipment, rather than the historic original costs;
- Stop the double taxation of profits—first on the corporation and then again on the share owner when he receives a dividend; and
- If the political obstacles can be overcome, reduce the corporate income tax rate."

It probably won't be possible, he admitted, to achieve all these tax reforms in the present Congress, "but a start should be made. Tax reductions for individuals *and* business are needed to sustain the recovery in 1976 and to strengthen the economy against inflation and unemployment in the years ahead."

A critical time for nuclear

Vice Chairman W. David Dance urged share owner action on another critical issue: support for the nuclear option in meeting energy needs.

"As a nation, we are at the crossroads," he





The scene at San Francisco's Masonic Auditorium on October 28: GE share owners hear how they can help with the issues facing business.

warned. "The technology is here. Nuclear power is safe, clean and economical. We can either go forward and benefit from the more than 20 years already invested in this national effort. Or we can permit the erosion of the nuclear power industry's capability to serve America's needs."

The latter course, in his view, would "foreclose the only other viable energy option the nation now has available—except for more imported oil at higher prices."

Dance re-stated GE's commitment to nuclear energy in strong terms: "As far as General Electric is concerned, your Company entered the nuclear business in 1955, pursuant to the government policy established by the Atomic Energy Act of 1954. Since then, remarkable progress has been made in efficiency, reliability and safety."

But, he warned, progress for the nuclear industry as a whole is possible "only if the nation adopts and carries out—at the federal level—clearly-defined policies supporting the nuclear option." He called on the government to:

- Publicly endorse the overwhelming judgments

of the scientific and technical community that the nation *needs* nuclear power:

- Reassure both the public and the industry that unresolved issues of the nuclear cycle will be dealt with carefully and responsibly. "As one possibility," he noted, "government might accept responsibility for plutonium, reprocessing of spent fuel and waste handling for a period of years under government security precautions."

- Streamline the regulatory process. "The present approach, involving lengthy adversary proceedings, is a serious obstacle to engineering standardization—a key to the design and construction of less expensive, more reliable nuclear plants." He noted that the eight to ten years now required to put a nuclear plant in operation means that interest cost alone during construction exceeds the total cost of the reactor and turbine-generator hardware for the plant.

In the end, Dave Dance, too, "asked for the order" by saying to share owners: "You can help stimulate the actions needed by sharing facts with your friends, neighbors and elected representatives in government."

(continued next page)



Davis:

“Congressmen need business information”

In today’s sensitive social and political environment, it would be easy to conclude that the wisest course for business is to avoid the government arena altogether.

“The opposite is true,” says VP L. Berkley Davis, in charge of GE’s Washington Corporate Office. “There has never been a time when participation was more important.” For Davis, the right way to participate is based on information: “The American system works on information, an informed electorate and an informed Congress.”

The need for participation is increased, Davis says, by the changing composition of Congress. “Congress is turning over faster, and is increasingly populated with people not familiar with the business world. The last election alone resulted in an almost 20% change—12 new Senators and 92 new Congressmen.”

Many of these newcomers, Davis points out, have never had experiences in business and aren’t acquainted with business needs. “The best way to fill these information gaps is through face-to-face communication,” he says.

One effective key to such communication is the Company’s Constituent Relationship Program, which recently marked its first anniversary.


The aim of the program is a basic one—establishing meaningful two-way communication between selected local GE managers and Congressmen from districts where GE has substantial numbers of employees. And it has been effective,

Davis says, for three reasons:

- The communication is two-way. Each Congressman knows that GE people are listening to him or her as well as providing information on the Company’s points of view through speeches by top officers and solid research background on key subjects.
- The two-way communication also provides legislators with information on the Company’s activities in plant communities which are in their district.
- The GE manager making the contact is a constituent of the Congressman—from which the Constituent Relationship Program derives its name. As such, he shares common interests with the legislator and is not an “impersonal voice of business.”

The first year of the Constituent Relationship program was a challenging one for GE constituents trying to keep timely information flowing to a Congress considering an unusual number of complex business-related measures. On several key issues, however, program participants were able to provide background information which was helpful to Congressmen in making informed decisions.

The success of the Constituent Relationship Program, Davis says, is not equated with favorable votes.

“Congressmen need business information—and information is the only ingredient in our program. If we’ve had a fair hearing on an issue, we feel that the program has met its objectives.” 

Among those meeting in Washington on the first anniversary of GE’s Constituent Relationship Program: Board Chairman Reginald H. Jones and Aircraft Engine Group’s Robert L. Miles in photo at left. Photo at right: Kenneth E. Bruning, left, Lexington, Kentucky lamp plant, VP L. Berkley Davis, Washington Corporate Office, and Lee Reid, right, Chicago.



Not the least of the services that the Elfun Society provides its members is a channel by which these higher-level GE employees can take on worthy projects. Here and on the following pages are two examples: one that benefits both GE and the Erie community by easing the path by which young people enter industry; the other a project of direct importance to the Company.

Aid for high-schoolers who aren't college bound

There are many young men and women in high school today who will not go on to a college or university. For these young people, guidance counseling is particularly important if they are to find satisfying careers.

And yet many guidance counselors are unaware of the wide world of opportunity that exists in industry for non-college-bound students.

Making them aware is the aim of a program at the GE plant in Erie, Pa.—a 15-week evening course designed specifically to familiarize guidance counselors with the many options available to young men and women who may enter industrial careers.

Erie Elfuns approached area colleges to secure their support for a program to aid guidance counselors. Over the summer and fall, GE people worked with Dr. Edward Ansell, of Edinboro State College, and Dr. Charles T. Lundy, of Gannon College, to develop the course. The program includes sessions during which the counselors “shadow” GE hourly workers performing jobs in the Erie plant. During other class meetings, guest lecturers, recruited by the Elfuns, present information on entry-level and apprenticeship programs, minority employment policies and union relations.

Guidance counselors who complete the course earn three graduate credits, are more knowledgeable about industry and, it is hoped, will be better able to advise students about industrial career opportunities and how to prepare academically for jobs in industry.

One of the program's most enthusiastic supporters is H. Charles Schultz, Superintendent of Schools for the Fairview (Pa.) school district, who is responsible for some 2400 students. Schultz, who worked two summers cutting platforms for GE locomotives and another summer at a GE refrigerator plant in Erie, explains that “years ago, more teachers worked summers to

supplement their income and get good experience in industry as well. Today that's not as prevalent.”

The result, according to Schultz, is that there are too many individuals who have gone through college and graduate school and into guidance counseling without ever being exposed to the world of work. The GE course is aimed at filling that gap in their experience.

“When students leave high school,” says Schultz, “they should have two doors available to them — one opening directly on the working world, with all its continuing educational opportunities, and the other leading to advanced training in college. The pendulum has swung back.”



At Erie: education for educators.

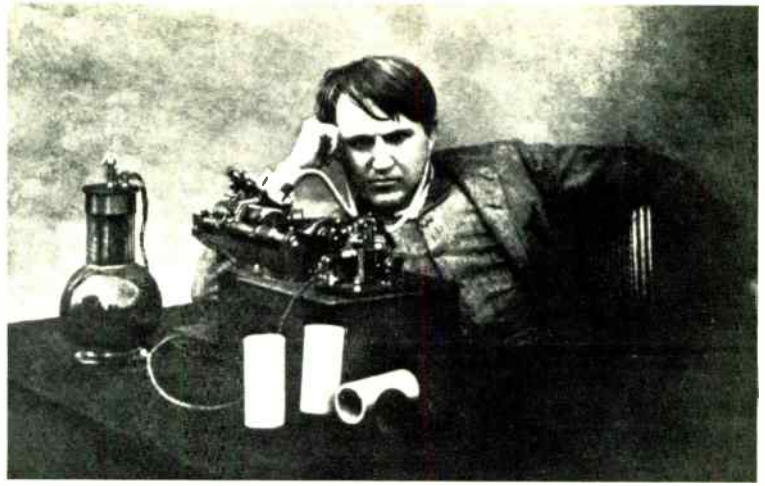
he says, “to where you're no longer a second-class citizen if you don't go to college.”

Another educator who comments favorably on the course is Dr. James E. McKinley, Vice President for Academic Affairs at Edinboro State College in Edinboro, Pa.:

“Since we're a state-owned institution, designed to meet the needs of the community, it's important for us to have some of our students enrolled in the GE course, especially those in our new rehabilitation counseling program. The course is a vital part of our total educational package, and I anticipate that other companies will follow GE's lead.”



*Tom Edison
-as lightning's young inventor*



-in 1888, after five days and nights perfecting the photograph



-in his chemistry lab



-with Steinmetz and GE lightning generator

New effort to preserve GE history

The photographs on these pages, depicting the early days of the electrical industry, are only the merest handful out of a historical treasure trove that has long been moldering in the Schenectady plant.

There, bound in some 3,200 albums, each of them containing 250 photographs, are the only known prints of photographs reaching back to the Company's earliest days.



—with associate Francis Jehl, in 1931, recreating the birth of the lamp



GE-ers in 1913, producing lamps—



—and helping to sell them

The good news, today, is that a new effort has been launched to preserve this heritage of over three-quarters of a million pictures. Acting on the urging and with the strong support of Dr. Arthur M. Bueche, VP—Corporate Research and Development, the Algonquin Chapter of the Schenectady territory Elfun Society has taken on the project of refurbishing and organizing the collection. Under the chapter's sponsorship,

Jeffrey L. Daly, a graduate of the Rochester Institute of Technology, is at work digging through dusty cardboard boxes in the basement of Building 5 to preserve the GE photos and make them more accessible—a worthy Bicentennial contribution!

As archivist Daly probes deeper, the *Monogram* expects to publish other selections from Schenectady's photographic treasures in 1976. **■**

Monographs



Honors. General Electric people and the Company have collected these notable awards in recent weeks:

- A merit award for Equitable Employment Opportunity has been presented to General Electric by Alpha Phi Alpha, the nation's oldest and largest Black fraternity, at its 69th annual convention in Miami Beach, Fla.

Thomas K. Edenfield, Vice

President—Southeastern Regional Relations, accepted the award for GE. With him are John W. Wilson (left), Project Manager—Cooperative Education, Corporate Education Services, and Adron Butler (right), Manager—Equal Opportunity Programs, Corporate Research and Development.

- VP Mark Morton, Group Executive—Aerospace Business Group, has been awarded the

Lloyd V. Berkner award from the American Astronautical Society for his significant contributions to aerospace technology.

- Dr. C. Guy Suits, General Electric Vice President and Director of Research from 1945 until his retirement in 1965, has been named this year's recipient of the Frederik Philips Award, presented by the Institute of Electrical and Electronics Engineers.

- Dr. Richard L. Porter, Manager of Scientific Affairs in GE's Aerospace Business Group, has been presented with the "Declaration for Exceptional Civilian Service"—the Air Force's highest civilian citation.

- For the third successive year, the General Electric Annual Report has won the title of best annual report by a company in the electrical equipment industry, as judged by top security analysts in a survey conducted by *Institutional Investor* magazine.

A Bicentennial Christmas. Helping America celebrate its 200th birthday, GE's Lamp Business Division is carrying the Bicentennial theme all the way to the top—of the White House Christmas tree.

The topmost ornament on this year's National Tree was designed by Lamp's John T. Suter, and features a golden Liberty Bell suspended within an ornamental framework lighted, of course, by GE lamps.

And if you think untangling your own Christmas lights is a knotty problem, consider the

task faced by the White House decorating crew—this year they will drape the big tree on the south lawn with 12,000 clear GE Merry Midget lamps, 400 red and blue Twinkle lamps and 100 lighted globes!

Thirteen smaller trees will symbolize the 13 original colonies and the "state trees" will carry alternating red and blue lighting themes.

In keeping with another theme that is equally strong in America today, the entire 1975 display will consume 40% less electricity than last year.





Record suggestion award. Keith A. Johnson of GE's Nuclear Energy Systems Division has received a record \$18,204 as the total of two suggestion awards paid him under the GE suggestion plan—one for \$14,015, the other for \$4,189.

His suggestions were based on the development of a new technique for retrieving GE reactor-core data and for developing a better way to input computer calculations.

The suggestion award for \$14,015 is the largest ever paid a single individual in the 68-year history of the GE suggestion plan.

Johnson also received a third award at the ceremony—a kiss from his wife, Marsha.

Nela Park hires sheriff. In honor of the 10th anniversary of the introduction of Lucalox® lamps, GE's Lamp Business Division at Nela Park in Cleveland has announced that National Safety Sheriff Joe Higgins will participate in a new public information program launching the second decade of Lucalox lighting.

Higgins, who won national acclaim as the sheriff on a TV commercial—coining the phrase, "You in a heap o' trouble, boy"—has turned from kidding portrayals of rural lawmen to more serious aspects of safety and law enforcement. He is also touring U.S. cities on behalf of GE's Lighting Systems Business Department to promote crime prevention, traffic safety and efficient street light-



ing. "Freedom from fear at night should be one of the rights guaranteed all our citizens," Higgins says.

At the anniversary celebration, the sheriff joined James A. Baker (left), General Manager

—Lamp Products Operations, and VP Robert V. Corning (right), Lamp Business Division General Manager, in lighting a huge birthday cake decorated with 10 Lucalox lamps.

New directions for GE plastics

Can GE's Lexan® plastics move into the market for bottles and other packaging? Will GE Noryl® penetrate the market for TV cabinets? Will GE Textolite® plastic surfaces make it big on walls and floors as well as on kitchen counters?

These are some of the multi-million-dollar questions whose answers are adding excitement to General Electric's plastics businesses these days. Talk to GE experts and the answer is "yes" in each instance.

Use of clear Lexan in bottles is "a really viable market opportunity for us—one we hope to move into in a big way," says VP John F. Welch, Group Executive for the Components and Materials Group.

Like glass, containers made of Lexan resin are highly transparent, can be hot-filled and sterilized, resist food stains, don't transfer taste and odor and meet all FDA requirements. The only thing Lexan resin containers don't do like glass is *break*.

The public's call for greater safety is opening up other new opportunities for GE plastics. Bullet-resistant Lexgard® sheet is in use in banks and other money-handling institutions. Lexan MR-40T4 is used in windows in equipment at construc-

tion sites, where federal regulations prohibit operation of vehicles with cracked windows. Mar-resistant Lexan-4000 sheet, guaranteed unbreakable and flame-retardant, is used as glazing aboard buses and high-speed trains.

Safety is also the opening wedge for Noryl's entry into TV cabinets. Noryl cabinets have the desirable property of being flame-retardant, as well as impact-resistant. Sixteen different TV models are currently being produced with Noryl cabinets by five different manufacturers. And in 1976, the industry will introduce at least five new models specifically designed to take advantage of Noryl's space-saving, weight-saving characteristics.

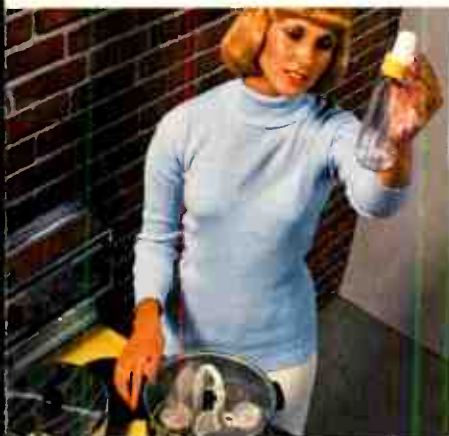
Valox®, General Electric's thermoplastic polyester, is also on the move. This engineering structural plastic, previously playing a single underhood role as an automobile fan shroud, is making its 1976 debut as the

"black box" housing for Chrysler's new lean burn fuel supply system designed to replace the catalytic converter now in use. The strength, light weight and good insulating qualities of Valox made it Detroit's choice for protecting the new system's sensitive computerized circuitry from high engine temperatures.

Most visible automotive application for GE plastics, however, is one using a foaming grade of GE polycarbonate dubbed Lexan 920 to mold the entire removable, one-piece top of a new Jeep model, the CJ-7. At less than 80 pounds, the top is half the weight of a comparable metal roof, yet provides greater insulation, say Jeep engineers. And thanks to the precise tolerances possible with Lexan foam, the plastic roof meshes well with the new Jeep's steel doors, making this a CJ model that can be locked.

On the job nearly everywhere, GE plastics are setting new standards of safety and durability.

(continued next page)



GE's Plastics Business Division has entered the packaging industry with a virtually shatter-proof product. Crystal clear Lexan resin is currently being molded into (clockwise from above): five-gallon water cooler bottles, gallon and half-gallon milk containers, guaranteed unbreakable windows for construction vehicles, light globes near the Washington Monument, and baby bottles, all up to ten times lighter than their glass counterparts.





PLASTICS (continued)

GE Textolite moves out of the kitchen

Home use of laminated plastic surfaces was once largely confined to kitchen and bathroom counters. And these still comprise major markets. But GE's decorative laminated surfaces, sold under the brand names of Textolite® and Parkwood®, are now turning up in floors and walls, in hospitals and yachts, in schools and mobile homes.

The new roles for these decorative surfaces, made by Laminated and Insulating Materials Business Department in Coshocton, Ohio, have brought them a long way from their origins in the laminated refrigerator door liners, transformer insulation, wedges and gears made by GE in the 30's. New materials—real fabric, metal, wood veneers—and up-to-the-minute designs and colors incorporated into the laminate have enabled Parkwood and Textolite to make the high-fashion jump from countertops to an architect's medium for almost any surface.

Eugene Flint, Design Director for the Parkwood brand, explains some of the changes: "Formality is one of the measurements of our trade," he says, "and ten years ago everything was very formal, slick and flashy. Today the look is coun-

try, informal, textured. The colors are natural earth colors. Surfaces often have a real 'feel' to them instead of glossiness."

Now designers can expand their traditional application concepts for laminates and have the chance to create luxurious effects at reasonable cost. Says Frank O'Keefe, Department General Manager, "Vertical surfacing and our new laminated flooring—Genuwood®, which is real wood veneer overlaid with vinyl—helped put us into the potentially large-scale applications like rapid transit, quality motor homes and decorator-designed commercial establishments. Our competition in these markets is surfaces like quarter-inch plywood and painted surfaces, which can not match the durability and beauty of Textolite, and regular wood flooring, which can not compete price-wise with Genuwood."

What's next? "We almost have to let the architects and decorators show us," says Richard G. Long, Product General Manager for Laminates Product Section. "They're starting to specify laminates in projects, and some of the custom uses they come up with we wouldn't ever have guessed." ❧

The durability of high-pressure laminates has allowed GE to pioneer striking new ways to cover a floor such as laminating vinyl (1) with wood, and (2) with fabric. New architect and designer-specified roles for GE vertical decorative laminates are: (3) Metropolitan Medical Center in Minneapolis, Minn., built around GE theme colors; (4) the art school of Cherry Creek School District outside of Denver, Colo.; and (5) Textolite Rosewood in a "Glenbrook" GMC motor home.

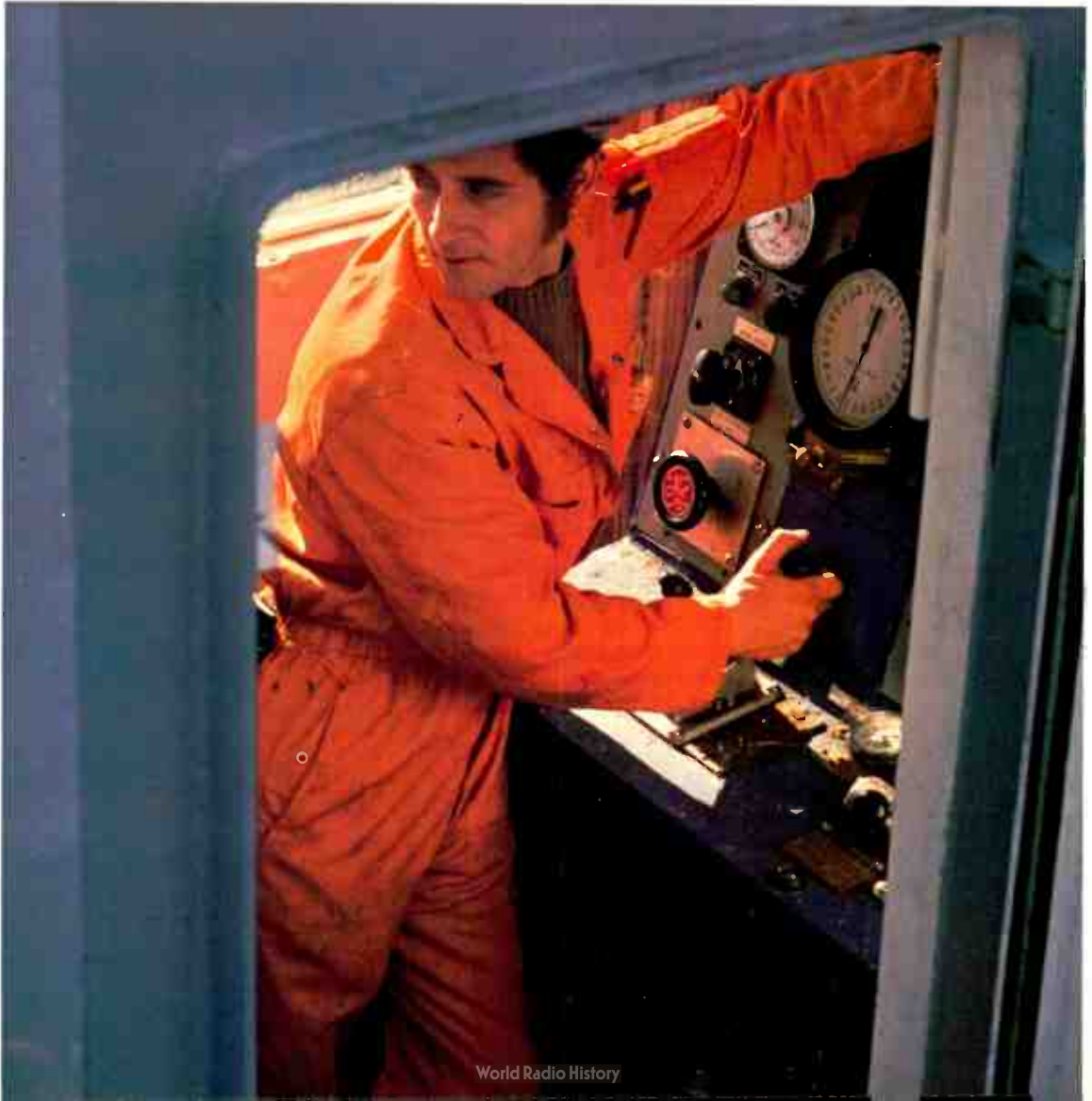
In the Coshocton, Ohio plant, George C. Rassman and Eugene W. Flint, design directors for Textolite and Parkwood laminates, are surrounded by some of the new informal colors and textures which have opened high-fashion doorways for both brand names of GE's decorative laminated surfaces.





Symbol of Scotland's unprecedented oil boom, a cruise ship turned hotel, the M.S. Venus, lies moored in Aberdeen harbor to ease the town's accommodations crunch. The occasion of her visit: Offshore Europe 1975, a good place to

get an overview of offshore technology, above right. GE leadership in that technology includes complete electrical systems, from generators to controls, as suggested by the console, below, for a semi-submersible rig.



Getting out the tough oil

Here's a *Monogram* close-up
of the scene in Aberdeen—
Scotland's 'Little Houston'

One way to make sure you have a room in Aberdeen, Scotland, these days is to fly to Amsterdam, Holland, board a cruise ship, plow through the North Sea for 20 stormy hours and use the ship as a floating hotel tied up at the Aberdeen wharves.

That's what this reporter did recently, to make sure of having bed and board while attending Offshore Europe 1975—an international trade exhibition held in a "tent city" in Aberdeen.

The reason that vacant hotel rooms are scarcer than palm trees in this city known for its fish, granite quarries and heather can be summed up in one word: oil. Major discoveries of riches under the gray North Sea have turned Aberdeen and other towns ringing this sea—Stavanger, Norway and Teesside, England as two examples—into boom towns.

The intensity of the interest in North Sea oil is indicated by the fact that 15,000 out-of-towners from 17 nations jammed into Aberdeen to attend the Offshore Europe show. Among the visitors: a GE contingent there to present General Electric as one of the world's most complete electrical systems suppliers for exploratory drilling rigs and production platforms.

GE has developed a leadership position in supplying the world oil industry. At Aberdeen the goal was to extend this lead in the North Sea.

In terms of necessary equipment, the North Sea is a whole new ball game because, while North Sea oil is plentiful—at least twice the recoverable amount on the North Slope of Alaska—it's also the toughest extraction ever attempted.

Consider the difficulty of drilling down 10,000 feet, starting in 600 feet of water from a floating steel structure almost as tall as the Statue of

Liberty. Try it in an environment that includes 100-mph winter winds with freezing salt spray and waves up to 94 feet high. Then the need for more advanced equipment than that used on previous offshore drilling sites like the Gulf of Mexico becomes clear.

What's the GE connection? The versatile control of large amounts of electrical and mechanical energy required in these environments is a GE specialty. The Company's multi-million-dollar stake so far includes gas turbines from Schenectady; marine and industrial turbines from the Aircraft Engine Group; diesel engine power systems from Erie; drilling and propulsion motors and AC and DC generators from Erie and Schenectady; complete electric control systems from Erie or the Drive Systems Department in Salem, Virginia; and switchgear from Philadelphia, to name only the main contributors.

These products reach the North Sea partly through the sales efforts of Europe Business Division and International Sales Division in Europe and also by direct sales from Industrial Sales Division's Dallas office, because Texas remains the heart of the world's oil equipment business.

A look at what all this sophisticated technology actually does when it goes to sea helps clarify GE's contributions. It begins like this: some huge semi-submersible drilling rigs are propelled hundreds of miles to the drilling site under their own power by propellers mounted in the bases for their columns. Driving the propellers in some cases are 2,000-hp electric motors from DC Motor and Generator Department, Erie.

When drilling commences, the drilling power is also often GE-supplied, as it is on over 400 of the world's estimated 1,500 land and offshore

(continued next page)



View from the M.S. Venus: Aberdeen's busy harbor as this fishing port adjusts to its new role as a major center for oil explorers from around the world.

drill rigs capable of being electrified. The modus operandi in the North Sea is the same as for all drilling—only the conditions differ. You need several large electric motors to drill an oil well—one to turn the “rotary table” that turns the drill bit, several to drive mud pumps that handle drilling mud which acts as a lubricant, two or three to power the draw-works that pulls the drill pipe back out of the hole and others for auxiliary functions. Transportation Systems Business Division makes a motor, a standard in the drilling industry, that does all these jobs. The 1,000-hp GE-752 drilling motors, plus smaller 550-hp GE-761 motors, drilling control consoles and diesel engine Power Modules, are all derived from TSB’s locomotive business. Their reliability and precise controllability made them a natural for the oil market, and they are turning drill bits all over the world.

A semi-submersible rig drilling at sea needs both AC and DC power in prodigious quantities and many different voltages. This can be provided most economically by generating large blocks of AC power and then converting part of it to DC for the adjustable speed drives for either drilling or propulsion. The rest of the

power goes through AC switchgear to “hotel load” uses and AC motors. Drive Systems’ AC-to-DC power conversion and control systems are already the “central nervous system” for 58 rigs worldwide.

While the drilling is going on, GE motors are providing the power for tension in anchor windlasses—keeping the rig positioned precisely over the hole in the face of wind, waves and currents. A sideways movement of more than 5% of the water depth and the drill pipe may snap. On some newer vessels, gimballed thrusters with GE motors under the hull apply additional amounts of counter-thrust needed to hold the rig on station. These “thruster motors” are built in Erie by the DC Motor and Generator Department.

After economically recoverable amounts of oil are found at a North Sea site, the drilling contractor moves his exploratory drill platforms to another site, and the oil company replaces the contractor’s rig with a permanent production platform. The biggest, like Norway’s Condeep platforms, are man-made concrete or steel islands that dwarf even the drilling semi-submersibles. Now additional power is needed on a



Looking out of scale in the Bergen, Norway harbor, a semi-submersible drill rig, equipped with GE motors and controls, is readied for duty in the hostile North Sea.

large scale. Oil must be pumped in and out of undersea storage tanks and forced, in some cases, through 200-mile pipelines to shore.

The GE product which can put 25,000 horsepower on the end of a shaft using practically any fuel from crude oil to residual oil is made by Gas Turbine Division in Schenectady. In their largest application on the North Sea, 36 GE gas turbines will be pumping crude oil to shore and reinjecting unwanted natural gas back into the wells for the giant Ekofisk Project of Phillips Petroleum and the Norwegian government.

The newest order for GE mechanical power on the North Sea has gone to Aircraft Engine Group for its LM-2500 marine and industrial gas turbines. Derived from GE's jet engines, these compact engines put out as much power as many other sources three times the size. Six of them will be pumping and generating in the Norwegian sector of the North Sea. Before the North Sea boom two years ago, gas turbines were used in the oil industry mainly for land-based natural gas pumping and compression.

The excitement of all this happening just 200 miles out to sea from Aberdeen was palpable at Offshore Europe 1975. North Sea oil has the

potential to substantially change the economic picture for the United Kingdom and Norway, the two most active North Sea participants.

But beyond all the North Sea technology on display at the Aberdeen show is a larger, long-range opportunity for General Electric. Offshore oil in general is the major new source of oil for the world. Easily accessible land areas have been well explored, and oil found in the future may well be in places like the Aegean Sea, the South China Sea, the Atlantic coastal shelf, the West Coast of the U.S., Alaska and the Amazon basin.

So, while recession and the political and economic uncertainty over the proper rate of extraction are slowing down the North Sea partners now, the offshore technology market is one of the surest long-term growth bets imaginable. An estimated forty percent of the world's oil is buried offshore. It will have to be extracted someday from waters even deeper than in the North Sea. Aberdeen, the bustling "little Houston of Scotland," is a scene that seems certain to be repeated in other parts of the world.

AV

The fight against alcoholism

A team of 104 GE people is at work operating the National Clearinghouse for Alcohol Information



About two-thirds of the adults in the United States drink—not all of them in moderation. But if the upcoming holiday season finds men and women drinking in a more responsible way, a group of General Electric employees can rightly claim at least part of the credit.

Operating the National Clearinghouse for Alcohol Information at offices in Gaithersburg, Md., a team of 104 GE people recently received a new \$3.4-million government contract. The Clearinghouse contract is a part of the Space Division's Information Systems Programs.

How did GE get involved?

It all started with passage of the Comprehensive Alcohol Abuse and Alcoholism Prevention,

Treatment and Rehabilitation Act in 1970 and the subsequent setting-up of a National Institute on Alcohol Abuse and Alcoholism (NIAAA).

One of NIAAA's first responsibilities was to establish a National Clearinghouse for Alcohol Information.

General Electric bid for the job of managing the Clearinghouse—not because of its expertise in the field of alcoholism but because of its acknowledged experience in information sciences. The GE proposal team was led by three people: Kenneth A. Campbell and Neil E. Munch, who were doing information sciences work for the national aerospace program in Daytona Beach, Fla.; and Walter Grattidge,

who was—and still is—responsible for the technical information exchange at the Corporate Research and Development Center in Schenectady, N.Y. Today, Campbell is manager of ISP's Information Centers Programs, and Munch is a member of the Clearinghouse staff.

The GE plan was accepted by NIAAA and, in June of 1972, a number of Company people formerly in aerospace information sciences work moved to a new location—Gaithersburg, outside Washington, D.C.—and a new subject: alcoholism.

According to Campbell, “We began with a basic information collecting and dispensing function—an area in which we had considerable experience and expertise. But we have been able to expand our activities into something far more creative than we originally anticipated.”

The GE team is working hard, he notes, “to create new means of bringing the *responsible use of alcohol* message to everyone.”

Keeping abreast of contemporary developments in alcoholism research is a tremendous job. The Clearinghouse subscribes to 385 domestic and foreign journals, receives 280 newsletters produced by various alcoholism programs, subscribes to a newspaper clipping service, and surveys books, magazine articles and academic publications on the subject. When totalled, 19,000 potential sources of relevant material are available.

Information deemed worthy of inclusion in the computer bank of alcoholism information is abstracted and catalogued. And more than 37,000 registered users of Clearinghouse services receive individual notification and grouped-interest guides from the Gaithersburg office. The Clearinghouse also puts out a magazine called *Alcohol Health and Research World*, provides an *Information and Feature Service* for reprinting by many types of publications, and makes available a wide variety of information on alcohol use and abuse—from directories of state and local alcoholism services to pamphlets, fact sheets and posters.

Other activities include:

- Contacting TV, film and theater producers regarding the “alcohol image” projected in dramatic offerings and pointing out that a dry martini is not a necessary prop in the portrayal of success on the stage or screen.
- Encouraging *Fortune* 500 corporations to set up internal programs to combat alcoholism.
- Working with journalists who write about alcoholism for general-interest publications.
- Getting exposure for alcohol-information spots prepared by an advertising agency.

Newest Clearinghouse “best seller” is a 16-page publication, “The Drinking American,” designed as a Sunday newspaper supplement

(continued next page)



and first distributed this fall in a Sunday edition of the *Columbus (Ohio) Dispatch* (circulation 350,000). Distribution via Sunday editions of several major metropolitan papers is planned. It is hoped that almost everyone who gets a Sunday newspaper anywhere in the country will

also receive a copy of "The Drinking American."

In "The Drinking American," there is this quote: "Since drinking has nothing to do with being cool or sophisticated or adult, it doesn't make any sense to look down on people who don't drink. Everybody has the right to decide

Two who came back

Around the GE circuit the prevailing attitude today is to aid the alcoholic, to assist the employee in finding appropriate help with his problem. Indicative of this trend are the examples of employees who are coming forward to discuss how they overcame their drinking problems—as encouragement to others who still have that road ahead of them. Here are two examples, excerpted from *GE News* stories at Nela Park and Syracuse.

NELA PARK: Marty King, coordinator of the Employee Counseling Services Operation, has been a General Electric employee for almost 29 years. Formerly manager of Advertising Services, King joined Lamp Business Division in 1956 as manager of advertising for the former Large Lamp Department. King and his wife Jane are the parents of five grown children. He's an ex-Marine, a lousy golfer, and a good fisherman.

He's also an inactive alcoholic.

Said King, "I got on the 'Drunkard's Express' when I was 17 years old and still wet behind the ears. I'd go out with the guys, drink a couple of beers and have a ball. Some years later, I switched to the 'hard stuff.' I drank for 21 years—and if I hadn't quit when I did, I'd have ruined my job and my family, my whole life. I was on the way to the bottom."

King's drinking problem developed gradually over those 21

years. After graduation from Dartmouth College, he worked as a pipeliner in the oil fields of southern Illinois. He worked hard, and he played hard. By the time King was 27, a friend had already warned him about his drinking.

When the second world war loomed ahead, King left Illinois to return to his native New Jersey and await induction into the armed forces. During that time he became a reporter for the Newark, New Jersey *Evening News*. He spent about a year on the paper before being inducted into the Marine Corps.

King was discharged in 1946, and he returned to the *Evening News*. Never a fall-down drunk, King had nevertheless developed a daily drinking pattern during his war service. It was noticeable enough to others—a considerate friend and USO employee took King aside to warn him that he drank too much.

"In retrospect," said King, "I realize that I was an early-stage

alcoholic at the age of 31. But I just continued drinking, believing I could stop any time I wanted to. I didn't know I was hooked."

Later in 1946, King joined General Electric, where he was assigned to the Apparatus News Bureau in Schenectady. Said King, "My drinking never really got in the way of my job—I drank evenings and weekends. But my family life suffered somewhat. I wasn't the best father in the world, and I wasn't the greatest husband, either. But I got along—my wife and I were both involved in various community activities in Schenectady during the five years we spent there."

It was about this time that King was drinking quite heavily every day. But he continued to do well on the job in spite of



Lamp Division's Marty King with some of the almost 1100 managers and supervisors contacted by Nela Park's alcohol education and counseling program in its first year.

for himself whether or not to use alcohol—or eat Brussels sprouts, or use spray deodorant, or wear turtleneck sweaters, for that matter. So when the time comes to make a decision about drinking, give your friends a chance to be themselves. And do the same for yourself.”

That statement is primarily directed to young people, but perhaps it is a good way to sum up the philosophy of the Clearinghouse for Alcohol Information.

For a copy of “The Drinking American,” write to the *Monogram* Editor.

the long social drinking hours, and he was made manager of the News Bureau in 1949.

It was in November of 1954 that King’s drinking experience came to a sudden halt. “Beginning one Friday, I drank excessively for five nights in a row, at times not remembering parts of the reality around me,” said King. “While in the drinking stupor, at a convivial social gathering, saner thoughts burst through the alcohol. I realized that the drinking had the better of me, and that I should quit and go home. The next morning, I told my wife I was finished with alcohol, even if it took help from others.”

Easier said than done, King can testify. His wife had already been to see their minister, and King agreed to see him as well. It was an encounter between, said King, “a humble, quiet man and a huckster who was bleary-eyed, insecure, and nervous—me.” The minister asked King if he was ready to join an organization that had a successful reputation for helping alcoholics.

“My pride was shattered,” said King. “I said, ‘Why? That organization is for drunks.’ The minister said nothing, but he looked at me searchingly. Somewhere, somehow, I got the courage to admit that I was a drunk and that’s where I belonged. November 23, 1954, was the day I started taking one day at a time without a drink. And I’ve been sober for the past 21 years.”

In the years since King

arrested his alcoholism, he’s devoted much of his time to helping others. “I’m so pleased that it’s now my job to help people suffering from alcohol and drug misuse. I know how easy it is to slip from social, to serious, to compulsive drinking—and I know what a long road it can be back to good health. I want to stress that our counseling program is free and confidential. We are not out to ‘bust’ anyone; we are out to help.”

SYRACUSE: While not identifying the individual, this is a verbatim account of one employee’s experience:

“I was a daily drinker and a periodic drunk for more than 20 years.

“I started drinking when I was 15 years old, and from the beginning I could drink more than any of the other kids my age. I moved on quickly to an older crowd of heavy drinkers, thinking *other* young guys couldn’t take alcohol and *I* could because I was a *real* man.

“Through the years I had constant headaches and didn’t feel good at any time. I couldn’t keep a thought for more than a minute. I was always calling into work telling them I was sick with pneumonia or the flu.

“Then one day, about five years ago, everything began catching up with me. School counselors were calling to talk with me about my children. My wife was constantly upset and kept asking me what she could do to help me. My boss was after me for being late and

taking so much time off.

“No one was really able to talk with me because I had built a wall around myself. I was afraid to love anybody because I felt like such a phony and did everything to prevent anyone from knowing the real me.

“I finally realized that I wasn’t drinking because I wanted to, but because I had to. Social drinkers can have problems with alcohol and stop drinking, but an alcoholic goes on drinking regardless of problems.

“When I finally went to my first Alcoholics Anonymous meeting, my family was as emotionally sick as I was. They joined Alanon, an organization which teaches people how to live with an alcoholic.

“One of my greatest satisfactions since I’ve given up alcohol is my closeness to my family. My eight-year-old son, who at one time would shout, ‘Dad, why don’t you get out and leave mother and me alone!’ now cries when I go away weekends.

“I’ll always be an alcoholic, and alcohol will continue to be an obsession with me, but I have no desire to drink anymore. Once you’re an alcoholic, you can’t be cured from it any more than you can be from diabetes, but you don’t *have* to die from alcohol.

“Check your drinking habits and if you need help, take advantage of the new program (at GE) or stop in at one of the 80 weekly meetings conducted here by Alcoholics Anonymous.

“There are many of us there waiting to help you.”





Darlene Chakeen handles Chicago callers.



New York is Bill Hatterscheid's responsibility.



In Miami, June Tillman fields queries.

'Can I put an

Why does the clothes washer shut off when I open the lid? What should the temperature be inside my refrigerator? My ice cubes taste funny—what's wrong? Why did the eggs burst in my microwave oven? Do your dishwashers sterilize dishes? How can I tell how much laundry makes an 18-pound load? What's a heat pump? Can I put an aerosol can in my trash compactor? Where is the serial number on my range? What's a BTU?

Last time the *Monogram* reported on the Major Appliance Group's Consumer Coordinators (March/April 1974), the men and women of this "Second Service Network" were just getting used to producing prompt answers for on-the-telephone consumers.

Now, as the Consumer Coordinator program approaches its second "birthday"—in December of this year, the coordinators take all the questions in stride and are gaining national recognition as a valuable element in the Company's ongoing program of communication with customers.

Are they busy? Well, William Hatterscheid in New York City gets more than 50 calls a day. His prize caller was a man "who called us 35 times in one day—we counted the calls—because he was about to buy a refrigerator and had *lots* of questions. But it was worth it—he did buy a GE refrigerator!"

And in Miami, Fla., June Tillman answers up to 100 calls a week. (She even had to interrupt her telephone conversation with the *Monogram* three times to answer consumer questions.) In Tillman's area, "most of the calls are from people who want to know where to buy our appliances—or need to know the exact dimensions of a product to see if they can fit it into the available space in their home."

She says that "lots of people are becoming more concerned about how much it costs to operate appliances. So I have a piece of paper with that information right by the telephone."

A few callers are angry—but very few. Hatterscheid says that "the only angry calls I

aerosol can in my trash compactor?"

get are from people who are having trouble with an appliance and get annoyed when the appliance service telephone line is busy."

Almost 100 men and women are serving today as Consumer Coordinators at GE and Hotpoint sales offices in key cities all across the country, according to Jane F. Butel, Consumers Institute manager in Louisville, Ky., who established the Consumer Coordinator program in 1973 and continues to direct its activities.

Trained by Consumers Institute regional directors, the coordinators are equipped with all the latest appliance information and are constantly being updated on Company products and policies. Their "bible" is a Consumer Inquiry Guide containing answers to more than 200 of the most-frequently-asked consumer questions. And if an occasional query "stumps" the coordinator, it is relayed to a Company expert who *does* know the answer—

and the consumer gets a call-back promptly.

Most callers don't have complaints; they are simply looking for information. And more often than not they are prospective purchasers of GE or Hotpoint appliances. As Darlene Chakeen, Consumer Coordinator in Chicago, Illinois, puts it, "People call because they are in the market for a new refrigerator, for example, and they've seen one of ours at a friend's home or in a newspaper or magazine ad, and they want to know more about it. Men usually want to know the exact dimensions of an appliance; women are more likely to ask about specific features."

Butel believes that "consumers really *need* to know more about the appliances they own or plan to buy. Moreover, they have a *right* to know. That's what the Consumer Coordinators are there for—not to sell appliances but to help consumers make informed appliance purchase decisions and get the most out of the products they have already bought." ■

Organization Changes

CORPORATE

Charles E. Reed, Senior Vice President—Corporate Strategic Planning and Studies.

Walter A. Schlotterbeck, Vice President and Corporate Counsel, elected Secretary of the General Electric Company.

Jacques O. de Labry, Manager—Management Systems, Strategy and Systems Staff.

Robert F. Smith, Manager—newly established Corporate Financial Planning and Analysis Staff.

CONSUMER PRODUCTS GROUP

Arthur O. King, Manager—newly established GECC Insurance Operations.

Richard Montmeat, Manager—newly established Housewares and Audio Industrial Design Operation.

INTERNATIONAL AND CANADIAN GROUP

William J. Durka, Manager—newly established International Legislative and Trade Policy Operation.

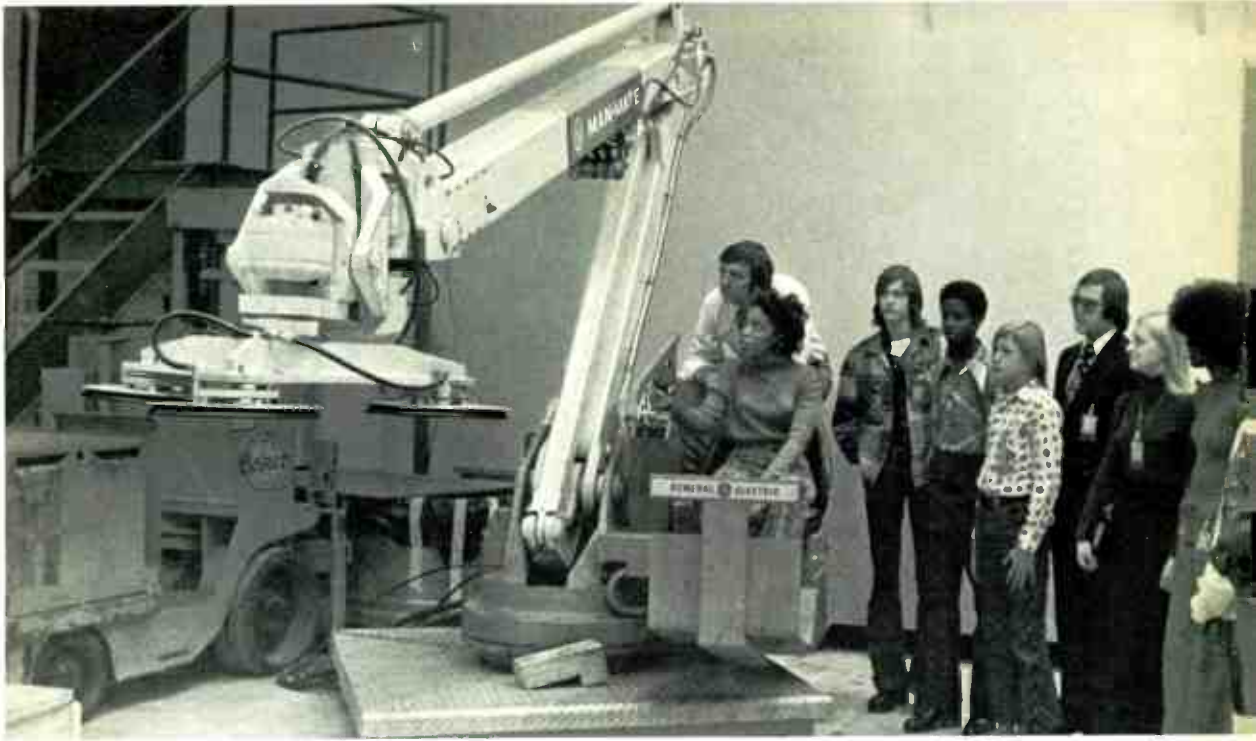
Dale F. Frey, Manager—Group Finance Operation.

Standley H. Hoch, Manager—Corporate Finance, Canadian General Electric Company Limited.

SPECIAL SYSTEMS AND PRODUCTS GROUP

Lawrence J. Czechowicz, Manager—GESCO Organization and Manpower Operation.

Jerome M. Warren, Manager—newly established GESCO International Operation.



Try-out as Superman

Valley Forge's Man-Mate® multiplies man power

Remote-control manipulators that can amplify man's muscle power have been around since World War II. But all that's necessary to generate a new wave of interest in them is to do what this *Monogram* reporter did: try one.

The place was the Valley Forge facility of GE's Re-entry and Environmental Systems Division. There, under the supervision of RESD's Walter E. Gray, who's in charge of Cybernetic Automation and Mechanization Programs, is located a demonstrator unit of the Man-Mate hoist which GE is marketing as a new series of CAMS (Cybernetic Anthropomorphous Machine Systems).

The Man-Mate demonstrator reduces this awesome nomenclature to a triangle of metal tubes supporting an arm with a pistol grip attached, plus some additional tubes that lead to a couple of tapered pieces of metal suggesting a human thumb and forefinger.

Under Gray's tutelage, you take hold of the pistol grip and wiggle your fingers, and you

find the mechanical arm and fingers precisely imitating your movements. Now the test is to pick up a bar of steel. Even though you're prepared for it, the realization that you can *feel* that remote bar and can heft its weight is astonishing.

Next you try a light bulb. Gingerly you grasp it in the fingers, knowing how easy it would be for those metal digits to smash the fragile glass. But again you "feel" the correct amount of pressure to apply. You swing the bulb around in the air and, triumphantly, replace it gently on the table.

The final test is the clincher when it comes to demonstrating Man-Mate's sensitivity. You're told to pick up a steel bar by one end and insert it into the hole in a large steel block. Once more there is that eerie sensation that your own fingers are feeling the bar bump against the block, then slide into the slot.

One application that Gray likes to describe is the use of Man-Mate in a foundry. Formerly, human muscle power was required for such

◁ GE's Man-Mate remote control manipulator gives this student's arm and hand a strength many times more powerful than her own.

functions as removing castings from their molds. Says Gray: "I can't think of any job more unpleasant than the one those guys had in that foundry. They had to endure that tremendous heat at close range and strain their backs picking up those heavy castings. Now the operator sits in an air-conditioned cab and, with that claw extension of his arm, picks up each casting and places it on the table as easily as if he were picking up a pencil."

A typical use of Man-Mate, as described by Gray, is to move refrigerator cabinets from one assembly line to another. "Before Man-Mate, men had physically to lift these cabinets. It was backbreaking work. Now, a machine stands between the lines and picks them up without strain."

In the Army, comparable tools pick up rocket pods and other ordnance and attach them to wing mounts on aircraft, without damaging the delicate skin of the wing structure.

Gray and his associates have their eyes on other applications and markets for Man-Mate. "It's in the energy area," he says, "that we feel these tools may find their greatest use. Oil companies, for instance, are interested in our underwater manipulator system—a pod that can carry a man down to great depths and allow him to repair equipment, using underwater arms. Such units would prove invaluable in offshore oil-drilling operations."

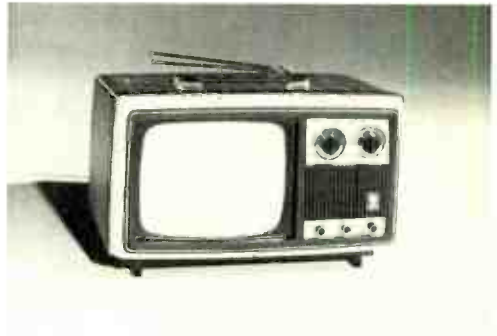
In connection with the Space Shuttle program, Gray's operation is proposing "a GE repairman in space." It's a repair satellite, operated by a person on earth, that could travel to a space unit, effect repairs and "even pat it on the head before sending it on its way."

Another application being pursued by RESD is in the off-loading of cargo containers for the Army and Navy. It would obviate the need for deep-water ports by hoisting cargo containers from a large ship to a smaller one.

What about the business prospects? Walt Gray cites as positive factors the need for increasing productivity and for eliminating unpleasant working conditions. "Man-Mate has the answers," he says. "They're answers that can boost productivity, eliminate drudgery and increase safety on the job." ■

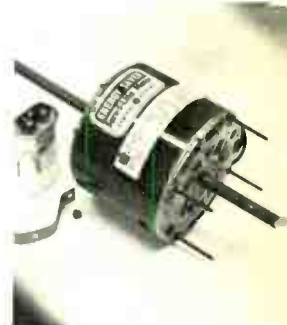
Product briefs

The JET90 countertop oven from Major Appliance is the world's first microwave oven able to monitor the internal temperature of food. Previous microwave ovens operated only by timer. The JET90, however, has a temperature-sensing probe which is inserted into the food when it is placed in the oven, and an automatic cooking control which turns off the oven when the food is done.



GE's 10-inch PortaColor® TV, the first fully portable color television made in the United States, and the first color TV to use the in-line picture tube, is celebrating its successful 10th birthday. It is still the industry's only 10" color set. Despite the effects of inflation and the cost of the annual improvements in performance that have kept it ahead of the competition, the 10-inch PortaColor TV still lists for \$249.95—the price at which it was introduced back in 1965.

Energy saver electric motors, designed by Fort Wayne's Specialty Motor Department, can replace the motors in heating and air conditioning units and use 15% to 40% less electricity to do the same job. Available in ratings of 1/3-, 1/4- and 1/6-horsepower, the efficient new motors reflect the Company's continuing concern about energy conservation.



VP Marion Kellogg writes about performance appraisals



Author Kellogg: subject for Business Week cover

“Almost every company has some sort of employee appraisal system. For most, managers complete a single form once or twice yearly. This is supposed to determine pay decisions, help an employee improve his performance, overcome personality problems, identify his potential for future growth and more.

“That one piece of paper, no matter how skillfully completed and discussed with the employee, should do all these things would be nothing short of miraculous. That its patent-medicine approach seldom does any of these things effectively is a more realistic statement.”

That gutsy declaration is from the preface of *What To Do About Performance Appraisal*, a book recently published by the American Man-

agement Association. The author? GE’s Marion S. Kellogg, Vice President—Corporate Consulting Services.

Not just a yearly interview. Believing that effective employee performance appraisal depends on a “psychological contract” between an employee and a manager, not a once-a-year interview, Kellogg emphasizes the importance of adequate two-way communication. The route to a successful contract: when both manager and employee understand the ground rules to be observed, the goals to be reached and the major steps necessary to reach those goals.

“I cannot stress enough,” Kellogg says, “how important I feel it is to reach an explicit agreement on the work results to be expected of each person, and if there are values placed on ways of achieving them, either behavioral or technical, to make these explicit as well.”

It sounds simple: make sure the expectations are clear on both sides, so that a formal evaluation will be based upon mutually-agreed goals. But Kellogg believes that the majority of appraisals are awkward for manager and employee alike precisely because there are *no* previously-agreed-upon goals upon which measurement can be made.

‘Negotiation’ in formulating goals. The methodology for formulating goals together she calls negotiation—an indispensable tool in every manager’s portfolio. “Too many managers,” she says, “content themselves with an employee’s performance rather than add to their administrative burden by trying to improve it—unless, of course, it is marginal or failing. But practically all admit there is a mountain of gold to be mined if they can find ways to increase the output of their professional and managerial employees.”

Good development practices, according to Kellogg, might involve having the employee make a work plan, providing examples of prior plans, teaming the employee with a more skilled worker or consultant, rotating people in jobs to expose each one to new information, or present-

ing a particular problem to the whole group for discussion.

Additional excerpts from *What To Do About Performance Appraisal* highlight the author's recurring emphasis on communication as a prerequisite to—and necessary part of—personnel evaluation:

- **Feeling rewarded.** “Worth special attention is the necessity for the employee to feel rewarded for his learning attempts. If he accepts a learning goal and finds himself achieving it, he experiences internal feelings of satisfaction that help spur him on to further attainment. The manager usually increases the desire for improvement by letting the employee know his efforts to improve are recognized and, if he is successful, by giving him additional recognition or reward.” (In the book's preface, incidentally, is VP Kellogg's observation that “lest I be judged as prejudiced against my sisters in the work force, let me say that solely for ease of reading, the pronoun *he* is generally used for manager and worker. It is meant to include both men and women.”)

- **More feedback for younger employees.** “As new, young employees enter the workforce, they ask for and deserve more frequent formal feedback from their managers than managers have been accustomed to giving. Minority and women workers, encouraged to advance as rapidly as possible, also deserve more and better coaching, as do older employees who sometimes feel left out of the mainstream of business and industrial life. In fact, most employees today demand greater voice in defining their jobs, setting their goals, appraising their contribution to organization results, and taking more responsibility for advancing their own careers.”

- **The buck stops with the manager.** “In the end, however, the manager retains his personal responsibility for achieving organization results. He must decide how to work effectively with each individual in the organization. He must face the fact that *he* has—or has not—contributed to the growth of the work team.”

As Kellogg puts the problem—and the challenge—in capsule form: “Down with lip service to paperwork systems that lead the manager to believe he has done his job when he has merely filled out the form or discussed it with the employee!

“Up with managerial responsibility to take action for needed results—and when this requires appraisal, to make one on the basis of sound information.”



For 'Readers' only

Last issue's feature, “For Women Only,” asked Genevieve E. Reader's help in deciding how the *Monogram* should deal with “second references” to women in our stories: last name only; last name preceded by *Ms.*; last name preceded by *Miss* or *Mrs.*

Well, the returns are in—just over 1,000 replies.

Winner, with 362 votes, is “last name only.” The recurring theme in the many notes that came with these votes was the importance of equality in today's editorial treatment of GE employees: “Why treat men and women differently?”

“Last name only—exactly as for a man in the same job.” “The marital status of a person who has made a contribution worthy of mention in the *Monogram* is not pertinent nor a contributing factor in his or her career achievement.”

Also cited was the growing use of the “last name only” format for both men and women in newspapers, professional journals and general magazines.

In second place was “last name preceded by *Miss* or *Mrs.*,” with 296 votes, and “last name preceded by *Ms.*” came in third, with 266 votes.

“First name only” was the write-in choice of 89 people, and 21 of you came up with “other” suggestions, ranging from a perhaps-tongue-in-cheek “last name preceded by ‘former homemaker’” to “how about a new (but old in Great Britain) designation—*Dame Reader* (‘dame’ in dictionary means ‘lady’)?”

The record number of replies—and the many coupons that were accompanied by explanatory comment—indicate that the topic is of far more than passing interest to GE women—and men. (One reply, “Last name only—of course!”, was signed “A Male Reader.”)

Someone even suggested that “by eliminating *Miss*, *Mrs.* and *Ms.* over the course of the year, you can print a whole page or two of additional copy.” We'll try.



Clearly, it's an amazing maze these youngsters have gotten themselves into at the Brooklyn Children's Museum. Molded entirely of GE Lexan® plastic, the clear, modular, three-dimensional labyrinth allows visitors to climb over, under, around and through while it teaches them the geometry of crystalline structures. Turn to the colorful feature which begins on page 14 for the latest in Lexan and other plastics from General Electric.