# THE MONOGRAM

JUNE 1966

DETECTING BACTERIA

MARTIAN LANDER

QUALITY FOSTER PARENT

ROUND THE WORLD BY BUSINESS JET . . . p. 5

**INSIDE: Nimbus Photographs . . . We're in HemisFair**
**Portable Refrigerator . . . New Motor Lines**

# LETTERS

### Third Man Theme

EDITOR: Your May issue contained a very interesting feature entitled "Boston or Bust" reporting on the fact that two GE representatives ran in the Boston Marathon Race and finished in sixth and 114th place.

Your story should have said *three*, not two, GE runners were in this race since New Hampshire's Granite State and GE's Meter Department were represented by John Philbrick, specialist-calibration in our meter laboratory. Our entry unfortunately did not finish the grueling 26-mile stint, having to drop out after 21 miles due to a leg cramp. But we feel his efforts are worthy of being mentioned. This was John's fourth entry in the Boston Marathon, with his best finish being 159th back in 1963.

AL E. LINDHOLM
Meter Department
Somersworth, N.H.

### On Tan Son Nhut

EDITOR: So Tan Son Nhut is a Vietnamese pilot! This is a big surprise and an even bigger discouragement. As anyone who has ever flown into Vietnam knows, and as anyone who reads a newspaper should know, Tan Son Nhut is the world's busiest *airport*. It is not given to comment on aircraft.

Those of us who can speak are thankful for reliable aircraft such as the F4.

(LT.) JOHN A. ANDRULIS
543 QM Gp.—Sup Con Br.
APO San Francisco, Calif.

*Thanks to Lieutenant Andrulis for this clarification. The comments on the J79 engine from Tan Son Nhut Airport are undoubtedly quite appropriate, however, as evidenced by his letter.*

### Another OSCAR-winner

EDITOR: Your May issue noted that the Company's Real Estate and Construction Operation received an award from *Factory* magazine in its OSCAR program (Outstanding Service and Care Achievement Recognition). Reentry Systems Department also won honors in the building and grounds maintenance category for "programs for better care of plant exteriors, floors, roofs, other building elements and yards and grounds." Judging

*(continued on inside back cover)*

The object of *The Monogram* is to keep its readers informed on General Electric activities so they may contribute more effectively to General Electric progress on the job and better represent the Company in its relations with the public.

## IN THIS ISSUE




Richard T. Tibbetts, Editor

Devere E. Logan

The *Monogram* is produced for office employees of the General Electric Company and its affiliates. It is published monthly at New York by the Employee Communication Operation of Management Development and Employee Relations Services and printed in the U.S.A. by the Maqua Company.



GENERAL ELECTRIC

VOL. 15, NO. 6

THE GENERAL ELECTRIC
MONOGRAM

JUNE, 1966

JUNE

## Congratulations

There is much of great consequence to report, but this month it seems right to start with the announcement of the engagement of Miss Mary Lou Maddux of Cincinnati to Mr. Joseph M. Rimsky.

For we're told that their forthcoming marriage will be the first among General Electric trainees. Only last summer the first two women were hired on the Manufacturing Training Program.

Miss Maddux was not one of those pioneers. But her academic work at the University of Cincinnati and her performance on a cooperative work assignment in Evendale were so impressive that she has an MTP assignment in Louisville this month, a year ahead of graduation.

She will complete that assignment in December, get married, return to the university for the second semester next January, and graduate next June.

Then she and her husband-to-be, a member of the Employee Relations Training Program at Evendale, will pursue training assignments and happiness together.

**THE FUTURE MR. AND MRS. RIMSKY**
*A couple of happy trainees.*

BUSINESS OUTLOOK

## Where Do We Go from Here?

The electrical industry can outrun its own galloping growth rate in the next ten years if it faces up to its global opportunities and challenges, President Fred J. Borch predicted this month at a convention of the Edison Electric Institute.

He noted that total 1965 world electric power was 3.3 trillion kilowatt hours, or approximately eight percent of all world energy use. The United States accounts for about one-third of the total in each case. In the U.S. alone, we may require as much as 2.25 trillion kilowatt hours of electric energy by the first half of the 1970s, he said, and some predictions run as high as eight trillion kilowatt hours by the year 2000.

**The Reason:** Behind those spiraling figures lies the pressure of "changes that

are taking place in a continuous chain reaction—sustained by the explosion of knowledge, technology, and population; and the implosion of instantaneous communication, supersonic travel, and increasing urbanization, all over the world."

This "shrinking world with exploding needs" is highly dependent on its electrical systems, but, he pointed out, "the energy resources are very unevenly distributed and even more unevenly used."

Observed Mr. Borch: "We are daily coming more and more to realize that we must achieve a better balance—in which water and air pollution is matched by purification, and consumption of resources is matched by replenishment."

The Company's chief executive officer told the nation's electric utility executives that the urban explosion provides a "unique and vast challenge for leadership" by the industry.

**On the domestic economy,** Mr. Borch said that continuance of the nation's unprecedented 64-month economic advance rests on the crucial question of whether companies can contain rising costs, "particularly as the cost stability of the American economy has recently been shaken and interest rates are rising."

He pointed out that the U.S. economy "rests in delicate and dynamic equipoise on four forces"—business, labor, Congress, and the Administration.

Concluded Mr. Borch: "As long as these are in relative balance as they have been —with some few exceptions—during the past five years, we may very well hope to continue the current expansion into the next decade."

But he cautioned that unrestrained or uneconomic actions by any of these forces "could tip the whole economy downhill into runaway inflation or unexpected slowdown."

MARKETING

## A Second America

Over the next 25 years, the country will echo with the sounds of some 65 million housing units being built according to J. Sanford Smith, vice president of Marketing and Public Relations.

Addressing a San Francisco conference of Pacific coast builders this month, he said that 20 million of these new homes and apartments will replace present substandard housing and 45 million will be additional units for a growing population.

With the current number of U.S. housing units at 65 million, this amounts to building "a second residential America" according to Mr. Smith. "These will have to be built to much higher standards, offering better values to the homeowner than the existing stock of homes," he said.

Urging the builders to construct for "tomorrow's customer rather than yesterday's — sensing the new tastes of the modern American and the new trends in construction technology," Mr. Smith cited as an example the trend to electric heating and cooling. This was evident in 23 percent of housing units built in 1965, compared to only two percent in 1958, he said.

UNION RELATIONS

## Appeal for Normalcy

Philip D. Moore, the Company's chief negotiator, this month urged the IUE to reconsider its coalition strategy and return to traditional bargaining relationships.

The initiative came in a letter to John H. Callahan, chairman of the IUE-GE

*(Continued on page 4)*

## AT DEADLINE

**Active Alumni:** The 1965 summary of the Corporate Alumnus Program of the General Electric Foundation was distributed this month, and shows that GE employees contributed $402,210 to some 555 institutions, with $345,103 in matching gifts provided by the Foundation. The amount matched was second only to 1964 in the eleven-year history of the program, and the total contributions plus matching funds meant $747,313 to American higher education. Since 1955 over 300 other foundations or business organizations have followed the lead of the Foundation in establishing this program.

**Speeding Up:** Major expansions in the memory and speed of the small-scale GE-115 model II will provide up to twice the memory capacity (16,384 words) of the previous model plus a nearly 20 percent improvement in the processing speed (6.5 microseconds). In addition, the GE-115 will be offered as a free-standing computer instead of the previously-marketed remote terminal to larger GE computers.

**End of the Line:** The final J79-8 turbojet has been shipped by the Flight Propulsion Division from its Evendale plant, and production has been started on the higher thrust J79-10 turbojet. The J79-8, rated at 17,000 pounds of thrust, was the 2,040th of the -8 series produced at Evendale. The first J79-10, rated at 17,900 pounds of thrust and designed for lower specific fuel consumption than the J79-8, will undergo operational testing in a U.S. Navy F-4J at Patuxent River Naval Air Test Center in Maryland.

**California Cable:** General Electric Cablevision Corporation has started construction of a parabolic antenna to be used in the CATV system serving Merced and Atwater, California. September 1 is the target date for start-up of the system.

**Under Control:** Dallas Power and Light has ordered its second General Electric process control computer system to provide power plant monitor and turbine control for its new Mountain Creek No. 8 unit. The GE/PAC 4050 is scheduled for delivery in October.

*(Continued from page 2)*

Conference Board, in which Mr. Moore reviewed the issues which have arisen since an unsuccessful attempt to establish pre-negotiation subcommittees with the IUE in early May.

Mr. Callahan had informed the Company that the IUE was abandoning any suggestions for joint meetings in view of General Electric's opposition. But when the IUE Negotiating Committee appeared for the May 4 meeting to discuss ground rules for subcommittee work, representatives of most of the seven other unions in the proposed coalition were included. Mr. Moore denounced this move as "subterfuge" and refused to participate on that basis.

**NLRB Charges:** IUE subsequently filed another charge against General Electric with the National Labor Relations Board, claiming that the Company had refused to bargain on May 4.

On June 8, the Company initiated a series of unfair labor practice charges with the NLRB against IUE and seven other AFL-CIO unions. In his letter Mr. Moore explained that the Company considers the conduct of the coalition illegal in at least five ways:

"1. In the case of the seven unions in the coalition which have nothing but local certification, it is illegal for them to try to force GE to bargain with them nationally.

"2. Even if each of the unions in the coalition were certified to bargain with GE nationally for its locals, it would be illegal for such national unions to try to force us to bargain with them as a single unit.

"3. It is illegal for two or more unions to lock themselves together, so that one or more of them cannot bargain freely without the consent of the others.

"4. It is illegal for one or more unions to conspire in subterfuge in order to promote other illegal objectives.

"5. It is likewise illegal for other union representatives to become conspirators by sitting with IUE, claiming they are part of the IUE Negotiating Committee, and thereby failing to give proper representation to employees at the local level where they are certified."

Mr. Moore added that the Company did not intend "to substitute NLRB and other legal maneuvering for the proper conduct of negotiations in the traditional manner" but had been forced to seek legal relief since the unions in the coalition continue to evade normal relationships.

**Strike Prospects:** In reply to complaints by Mr. Callahan that the Company was engaging in strike talk, Mr. Moore observed: "We are mature enough to realize that every negotiation . . . presents the possibility of union strike action. No amount of public relations maneuvering as to 'who said it first' can dispel the fact that a strike always looms as a possible union decision."

He cited the danger of eight unions locked in a coalition and the inflated scale of the publicized contract demands as indications that the union group was headed toward a strike.

He concluded: "In this troubled period, when the worries of inflation are so real and the whole nation looks to unions and companies to negotiate with a sense of matured responsibility, we think we are justified to ask you to reconsider the strategy your union is pursuing.

"We are still hopeful that IUE and other unions in your coalition will respond to our several bids to meet for pre-negotiations work and, if you do not find it possible to do that, we remain hopeful that IUE will manage to free itself of coalition captivity in time to start formal negotiations by mid-August."

BACK WHERE SHE BEGAN — William A. Shipprell, vice president and general manager of Lear Jet Corp., and Richard B. Smith, manager of General Electric's Business Aircraft Engine Operation, pose with globe-circling Lear Jet.

JET ENGINES

## Twice Around the World

In an age when astronauts orbit the globe in an hour and a half, it seems strange that men can still set records by flying around the world in an airplane.

But within the last month, not one, but two, air crews did just that in business jet aircraft, and both were powered on their historic flights by General Electric CJ610 turbojet engines built in Lynn.

In late May, a Lear Jet accomplished the first around-the-world flight by a business jet when it took off from its home base in Wichita, Kan., and circumnavigated the globe in 66 hours and 19 minutes, including 17 stops for refueling. Flying time for the 23,400-mile journey was 50 hours and 21 minutes.

Early this month, a Jet Commander of Rockwell-Standard Corporation's Aero Commander Divisions performed a similar feat, starting and ending its circumnavigation at LaGuardia Airport in New York. The journey consumed 86 hours, including 57½ hours in the air, and involved 19 refueling stops. Its four-man crew (see cover) included Arthur Godfrey, radio and television star and a veteran pilot, and Dick Merrill, who is reputed to have more documented flying hours—39,560—than any living pilot.

**Globe Hopping:** No leg on either flight exceeded 1500 miles. The twin-jet executive aircraft have limited range compared to commercial airliners, but their short takeoff ability and rapid acceleration to climb speeds enable them to land at and take off from many thousands of airports which are not served by the big airliners. A key to that performance is the CJ610 engine which has a thrust-to-weight ratio of 7.33, tops in commercial service.

Purpose of the flight was to dramatize the advances in general aviation safety and reliability during the past 15 years, particularly in the burgeoning field of business jets. Aero Commander reported that 21 national governments, 12 aircraft

STOP-OFF — Jet Commander crew stretches and accepts bouquet from Japanese hostess during refueling stop in Tokyo. From left, they are Karl Keller, Arthur Godfrey, Fred Austin, and Dick Merrill.

industry firms and eight government agencies of the United States cooperated in its mission.

The itinerary of the Jet Commander explains the extensive pre-flight arrangements: New York to St. Johns, Newfoundland; to Santa Maria, the Azores; to Madrid, Spain; to Athens, Greece; to Tehran, Iran; to Karachi, Pakistan; to Bombay, India; to Colombo, Ceylon; to Butterworth RAF Station, Malaysia; to Labaun, Borneo; to Manila, the Philippines; to Taipei, Formosa; to Tokyo, Japan; to Chitose, Japan; to Shemya, the Aleutians; to Anchorage, Alaska; to Seattle; to Los Angeles; to Oklahoma City; and back to New York.

**More from GE:** In addition to the Flight Propulsion Division, two other Company components were represented on the flights. The Jet Commander's electrical system was supplied by the Direct Current Motor and Generator Department in Erie and the Specialty Control Department in Waynesboro, Va. Erie supplied an air conditioning motor for the Lear Jet.

While the CJ610 was making history in commercial aviation, the military engine from which it derived was also passing a milestone. Lynn shipped its 4000th J85 turbojet last month.

## GE4's Upward Thrust

The Company's powerful (50,000 pound thrust) GE4 turbojet engine for the U.S. supersonic transport (SST) will soon get a 20 percent boost that will make it the only turbojet engine to supply 60,000 pounds of thrust.

This boost will mean a GE4 power capability that is three-and-a-half times over today's current crop of commercial engines for long-haul jets.

The decision was announced by Gerhard Neumann, vice president and general manager of the Flight Propulsion Division, to an Air Transport Day dinner held last month in New York.

Presently, the GE4 is one of two engines competing for the job of powering the SST and represents an investment of some $20 million. The engine is designed to propel the SST at Mach 2.7—1,800 miles per hour—at 70,000 feet.

**Supersonic Future:** The U.S. SST, Mr. Neumann said, could transport 1,000 persons a day between New York and Zurich or it could fly from New York to Paris in two hours and 45 minutes, compared with seven hours by today's subsonic jet transports.

By 1990, the FAA predicts a five-fold increase in long-haul passenger air travel, and Mr. Neumann estimates that SSTs could carry half of this market. To U.S. industry, this can mean that the SST would be a $20 billion business in the next 20 years.

An augmented turbojet is being recommended by General Electric as the logical powerplant for the U.S. SST. Mr. Neumann pointed out that the overwhelming majority of the world's supersonic experience is with turbojets. Their performance is excellent, supersonic and subsonic characteristics well understood, and are the simplest engines for this speed range.

The afterburning turbojet design, according to Mr. Neumann, best meets airline operational requirements of reliability, maintainability, safety, performance and economics.

"Development of the SST is the next logical step in the progress of commercial air transportation," Mr. Neumann said. "General Electric plans to be part of the progress . . . by translating our extensive supersonic experience into the most advanced, but reliable, powerplant for the U.S. SST."

QUALITY CONTROL

## Something of Value

Kwang Yul is an eleven-year-old boy who lives in a crowded orphanage on an island in the Yellow Sea, yet he is part of a unique quality control program underway in the Large Generator and Motor Department.

Kwang, along with two other needy children—one in the Philippines, the other in Ecuador—was "adopted" by a group of employees in the a-c product section participating in an incentive program called "Bee Right."

Sponsorship of these children—through the Foster Parents Plan—is paid for by the Company in the name of employees showing the best quality improvement in a manufacturing area in the section.

**Proud Parents:** There are 28 employee groups competing for the role of foster parent, but they must top a monthly quality goal established as a result of their performance in the past year.

"For the first month of our program," reports Roy E. Burris, manager of quality control, "the punch press spot welding area beat its bogey by 79 percent — the best record in the section. So, we sent a check for $180 to the Foster Parents Plan in the name of this area, and these 42 fellows and girls are now foster parents for an entire year."

A total of 12 individual children will be adopted by employees during the "Bee Right" program. Each group receives a photograph of the child, and when regular letters arrive, they are circulated among employees and sent to their homes.

Such activities involve a worker's entire family, points out Mr. Burris, and act as a continuous reminder that "quality control is a year 'round job."

**How It's Doing:** During "Bee Right's" first month, 11 work groups exceeded their quality control goals. In the second month 15 groups went beyond last year's records.

"It doesn't make any difference how many times the same group wins," says Mr. Burris.

"Actually, though, everybody wins when you come right down to it—the worker, the customer, and the sponsored child."


**PRIDEFUL FOSTER PARENTS** are Robert Brown and Eva Kubinska of the Large Generator and Motor Department, shown with a photograph of 10-year old Lolita Roldan of the Philippines. The little girl was "adopted" by a group of employees participating in the department's "Bee Right" program, which provides for monthly sponsorship of a needy child to the employee group turning in the best quality improvement.

CHEMICALS

## PPO's New Partner

Our growing family of plastics had a new addition this month as the Company's Polymer Products Operation announced its new Noryl* thermoplastic resins.

The new product was developed as a companion product to PPO* polyphenylene oxide—the tough, readily moldable, unique plastic that withstands wide temperature ranges (*The Monogram*, Dec. '64). Although Noryl has similar properties, its commercial applications are appropriate where the ultra-high performance of PPO isn't needed. Noryl is being marketed at 75 cents a pound versus $1.15 for PPO.

Noryl keeps its excellent mechanical properties up to about 200 degrees F. It resists hot water well, is nontoxic, resists staining, doesn't corrode, and can be painted, metallized or plated.

NORYL PROTOTYPES are displayed by Dr. John F. Welch, manager of Polymer Products.

Noryl is expected to enter many of the markets not now being served by other General Electric plastics: PPO, Lexan® polycarbonate resins, and phenolics.

**Applications:** With its combination of good mechanical properties and ease of processing, Noryl is ready to step up to a wide variety of jobs. For example, because of its tolerance of wide temperature changes, it can be put to work on a number of plumbing and water distribution assignments such as in making pump components, water softener valves, or beverage dispenser components.

Noryl will be produced at the Polymer Products Operation's Pittsfield facilities until being switched over to the new PPO plant at Bethlehem, N.Y. scheduled for completion in the fall.

**Trademark of General Electric Co.*

GOVERNMENT RELATIONS

## Dialogue in Washington

Business and government representatives got a little better acquainted last month in Washington, and both sides found the interchange stimulating.

Twenty-three General Electric managers spent a week in the nation's capital meeting, listening to, and discussing issues with representatives of the legislative, executive, and judicial branches of government. They were participants in the first General Electric Federal Government Relations Seminar.

Concluded one department general manager who attended: "I came away with a different impression of how things are conducted in Washington. I believe it is an experience much of our top management should have."

The same conviction prompted Vice

**CAPITOL CONCLAVE**

*A different impression of government.*

President Laurence I. Wood of Washington Services to arrange the seminar which he expects to repeat about twice a year. Explained Mr. Wood: "A whole new dimension has entered the government-business relationship with the advent of the 'Great Society'.

"It is vital that General Electric managers meet with members of Congress and various other governmental agencies to gain a more intimate knowledge of government processes, public policies and issues, and how these relate to Company plans and capabilities."

During their fast-moving introduction to the process of Government, participants met with 28 federal officials, including eight members of Congress and representatives of the Departments of Commerce, State, and Defense.

Other stops: the White House, the General Accounting Office, Federal Communications Commission, Court of Appeals, Civil Aeronautics Board, and Bureau of the Budget. (In photo above, group is pictured on steps of Capitol with Mr. Wood and Rep. Carl B. Albert, the House majority leader, front and center.)



## Micro-Sleuths

Our world is literally crawling with tiny bacteria busily living their microscopic lives in everything from a bit of cheese or creamed pie to sources of deadly food poisoning.

Some of the "most wanted" types of bacteria dangerous to man are also the most difficult to track down. Since it takes about 25,000 to form a column only one inch long, detecting and identifying such miniscule mites can be a formidable job.

A ray of hope has been generated at the Electronics Laboratory in Syracuse, however, where scientists have developed a new detection and identification technique that promises to cut to just hours the days or weeks now required by classical methods.

So far, experiments with some 32 types of microorganisms have yielded unique identifying "fingerprints" for each.

In addition to reducing the time required to analyze samples of clinical specimens, says Harry F. Mayer, manager of the Electronics Laboratory, the technique "provides a new opportunity to study the basic life processes of microorganisms and will help scientists learn more about organisms believed responsible for certain diseases."

The investigation is being conducted by the Company for the U.S. Air Force Office of Scientific Research. Cornell University is also cooperating.

**How it Works:** The secret of the new technique is in looking for *signs* of bacterial life rather than for the bacteria themselves. Since bacteria, like humans, generate certain waste products (water, carbon dioxide, acetic acid, or ammonia among others) it's possible to use chemi-

cal detection techniques to determine their presence.

Early in the project, Dr. Martin Alexander and John R. Gould theorized that the combination of these metabolic products might be sufficiently different to provide a basis for identification. So, they set out to prove their theory with the assistance of consulting microbiologist Dr. Robert T. O'Brien and Dr. Yigal Henis of the Hebrew University.

Pure strains of the bacteria were used in the research, with a standard laboratory chromatograph used to separate and analyze the metabolic products. A chromatograph is an instrument which senses the differences in substances passing through a column of inert packing material. Each product has a unique rate of passage through the column, and this is recorded on highly sensitive detectors at the end of the column.

What is printed out is what might be called the "fingerprint" of the bacteria. So far, scientists have been able to distinguish one species of bacteria from another as well as one strain from another within a species.

**GOULD, MAYER AND PRINT-OUT**
*"Fingerprints" for 32 microorganisms.*

**Applications:** Mr. Mayer points out that the Electronics Laboratory became involved in such biological research because there is growing interaction between biological and physical sciences.

"We expect the eventual application of the technique to highly automated medical diagnostic equipment, hospital monitoring equipment, and water and air pollution monitoring equipment," he said.

RECRUITING

## Who's Got the Action?

When the Class of '66 steps off the college campus this month, too many of the top graduates will be heading away from careers in industry.

This unfortunate trend, says Joseph M. Bertotti, the Company's manager of Educational Relations Service, is based on an ill-founded but widespread belief that, as one student put it, "business isn't where the action is."

**Survey after survey,** noted Mr. Bertotti in a speech last month, has shown that few of today's college students feel that business is "helping mankind" and that young people are looking elsewhere for opportunities to serve society. He cited as one indication the fact that engineering enrollments have not risen in the last ten years even though overall enrollments have skyrocketed.

Commented Mr. Bertotti: "We've tried to point out to engineering deans that we have a common problem in trying to show young people that the social problems of the world cannot be solved at the discussion table alone; that a mayor's

**SPOKESMAN BERTOTTI**
*His message is action-packed.*

conference in New York City will not take care of urban transportation problems or air pollution. In case after case, solutions to broad social problems must be based on technological breakthroughs —on what is economically feasible, then implemented on that basis."

**As evidence** of industry's involvement in the efforts to solve broad social problems, he pointed out General Electric research and development bearing on urban congestion, the water shortage, depletion of our fossil fuels, water and air pollution, and the application of modern electronics to the fields of health and education.

And on the critical social issues of the day such as civil rights, equal job opportunity, and alleviation of poverty, Mr. Bertotti said "the quiet, but positive, day-by-day action of managers and professional employees is even more valuable" than the more dramatic forms of social protest which attract so many young people.

As examples, he cited cases in which General Electric managers helped to integrate the bowling alleys in one community and the motels in another. And in a third community, he reported that the local plant manager was asked to make the plant cafeteria available for a meeting of local citizens and federal officials because it was then the only integrated eating facility in the city.

**Lasting Gains:** Mr. Bertotti stressed that the "discipline of the market place" is valuable in assuring the endurance of social and economic gains and not the obstacle it may be thought to be.

"The very necessity to move for reform within an atmosphere where considerations of profit and loss prevail makes the challenge even greater," he observed. "Such discipline also makes long-term survival of the new advances much more probable."

Mr. Bertotti carried this message to the participants at the College Placement Officers' Conference at Crotonville last month. The three-day meeting represented one step the Company is taking to sharpen industry's faded image on campus. Thirty-six college placement directors exchanged views, complaints and suggestions with General Electric recruiters and personnel managers.

INTERNATIONAL

## Addition in Germany

General Electric last month acquired Kuba-Imperial, West German producer of radios and television sets.

The new subsidiary, which employs more than 3000 people in seven companies, will continue to market products under the trade names of "Kuba" and "Imperial."

# On a Clear Day... You Can See a Continent

If you think you've heard all about the crazy camera bugs who will go to any length to get an interesting angle on a picture, we'll bet you haven't met the most "far out" photographer of them all.

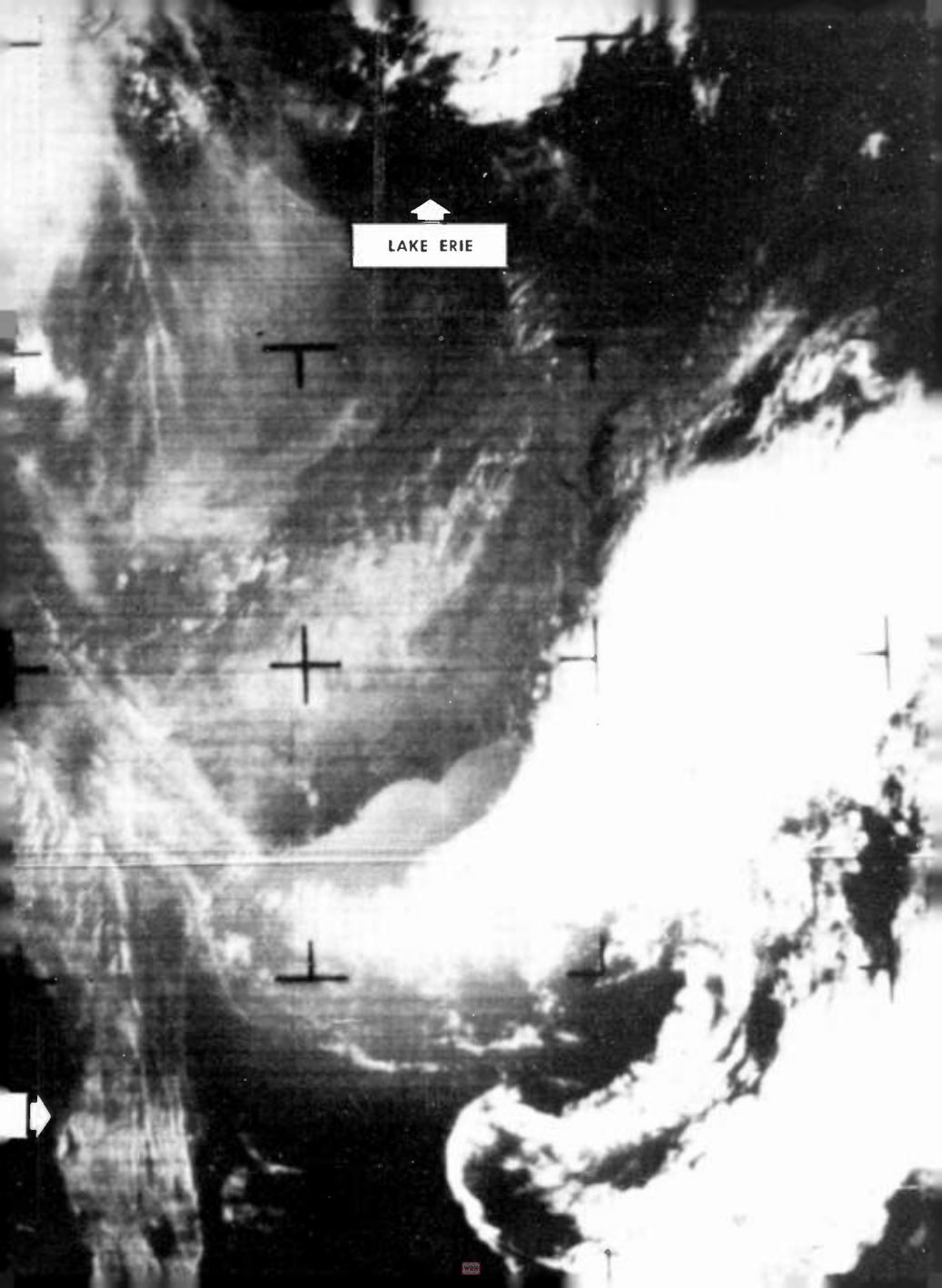
Case in point: the photograph at right. It was taken at about noon on May 16, and the angle is utterly fantastic—700 miles above the earth. You have to get up that high to encompass the eastern half of the United States in one picture frame.

The "photographer" who set up the shot is no mortal. It's the Nimbus II weather satellite (drawing inset) which thundered into a south-to-north polar orbit with the help of a Thor-Agena rocket at 3:56 a.m. (EDT) on May 15. Nimbus II has been snapping great areas of the earth's surface ever since at a rate of 3,000 a day.

The people who put this mechanical photographer together—and designed and built the critical flight control subsystem to keep the cameras pointed at the earth—work for General Electric in the Spacecraft Department at Valley Forge.

This is the second weather satellite which Valley Forge has prepared for its extra-high altitude photographic mission. The first Nimbus was launched in August, 1964, and operated successfully for a month before trouble developed with the solar paddles which provide power for the spacecraft. A third Nimbus has been contracted for by the National Aeronautics and Space Administration.

While pictures from outer space of the earth's contours are diverting to the layman, meteorologists are more interested in the clouds which frequently obscure the view. That's Nimbus' purpose: regular daily observance of the earth's atmosphere as a step toward the development of a global meteorological satellite system.


LAKE ERIE

APPLIANCES

## Roaming Refrigerator

A new GE portable refrigerator, light enough to carry from room to room or beyond the patio may spell the end of the refrigerator's days of kitchen confinement.

The compact, 52-pound unit is currently being test marketed in New York and Los Angeles at under $80. The Household Refrigerator Department is marketing the new product, however it is being manufactured by the Company's Italian subsidiary Compagnia Generale di Elettricita S.p.A. Milano.

The compact portable has a net volume of 2.1 cubic feet and measures a mere 18 inches high, 22 wide, and 20 deep. Inside, it has two adjustable shelves, two door shelves, removable egg rack and freezer compartment adequate to accommodate a standard ice cube tray.

**Test marketing:** The market for just such a compact, portable refrigerator light enough to be carried from room to room has been growing slowly and steadily in recent years.

"After some serious study we decided to enter this market," says Fred H. Holt, general manager of the Household Refrigerator Department. "But we found that making the product in the quantities now needed would not make sense in our Appliance Park plant where we have been working hard just to keep up with the many models already in the line.

"Taking the world-wide view," says Mr. Holt, "we found that General Electric's Italian company had the men and the facilities to do the job, so we commissioned them to do it to our design and manufacturing specifications. The results have been excellent."

Mr. Holt said that the department was pleased with the portable's acceptance and that it plans to broaden sales to include the rest of the country soon.

"Many Americans have already found a need for a second refrigerator and we think many more will as they discover the ways in which a small model can be helpful."

GE PORTABLE ON THE PATIO

*Cool convenience you can carry around.*

PUBLIC RELATIONS

## It's HemisFair in '68

With pleasant memories of outstanding acceptance at both Seattle and New York World Fairs still lingering, the Company announced last month that it will participate in another international exposition: HemisFair '68 to be held in San Antonio, Texas.

The announcement was made jointly by GE Regional Vice President William B. Frogue and HemisFair '68 Executive Vice President James S. Gaines.

Mr. Frogue, speaking in behalf of "the more than 3,000 General Electric Company employees in Texas," said that "we are pleased to be the first international company to announce our participation in HemisFair '68."

The site of HemisFair will be 92 acres in the heart of San Antonio only 200 yards from the historic Alamo. The exposition will run from April 6 through October 6 and mark the 250th anniversary of the founding of the city. Among the objectives of the exposition: "to encourage travel and stimulate technical, trade, and cultural exchanges between the old and new worlds in our hemisphere."

According to Mr. Frogue, details of the Company's participation will be announced following completion of layout, design and enginering specifications currently being prepared. Attendance at the GE exhibit is expected to be about 2.5 million of the HemisFair's seven million visitors.

SPECIALTY MOTOR

## Fort Wayne Foursome

In what it calls "one of the most ambitious and far-reaching new product programs in its 13-year history," the Specialty Motor Department announced that four new product lines will be added to its market basket.

The first addition, being unveiled this month, is a new high-performance line of Hyper-Servo* motors expected to be strong entries in the $377-million computer peripheral equipment market (card readers, printers and tape handlers).

General Manager Jack J. Clarkson says a computer user will get "more bits for his dollar" since the new motor can increase equipment response speeds.

**HYPER-SERVO MOTORS** for computer equipment application are a timely topic for, (from left) design engineer Fred Armstrong, general manager of the Specialty Motor Department, Jack J. Clarkson, and George Wralstad, manager of shop operations.

The new Hyper-Servo Motors offer customers a speed and reversal response up to 50 times faster than standard d-c industrial motors plus weight savings of 40 to 80 percent. Their instant response—as fast as one millisecond—is complemented by acceleration faster than any motor ever offered by the Company.

Currently in development is a second line, a streamlined version of the department's fractional horsepower d-c motors for industrial machinery, data processing and business machines.

An entirely new synchronous and induction motor—slightly over three inches in diameter—is also being readied for production. A fourth line, larger versions of the Hyper-Servo Motor for machine tool and defense applications, will complete the lines early in 1967.

Mr. Clarkson says that these new lines—to be built in Fort Wayne—should increase Specialty Motor's capability to attract new business and to push sales to new heights.

**Trademark of General Electric Co.*

## Clamming up on Mars

The planet Mars may have a visitor from space in the 1970's that will look surprisingly like an earthly clamshell dropping in to call.

Such a scientific lander capsule is part of an out-of-this world group devised by engineers at the Re-entry Systems Department and described recently to a symposium of the American Astronautical Society at Anaheim, Cal.

It seems appropriate that the meeting—concerned with "The Search for Extra-Terrestrial Life"—was held at the Disneyland Hotel.

**Clam Session:** According to Pitt G. Thome of RSD and Ernest J. Merz of the Company's Voyager Project, after the clamshell thumps down on Mars, it will open to release a variety of devices whirring into action. These will gather data on atmosphere, weather, soil, and life (if any). The information will then be telemetered back to earth.

**MERZ, THOME AND CAPSULE**
*About 1973, clamshells on Mars.*

**MR. ALAI AND STRING STRUCTURE**

Such a clamshell capsule emerged from studies as an optimum design that would be part of a system launched by a Saturn V rocket in 1973. Present plans call for the U.S. to send the first lander to Mars then.

The clamshell, as envisioned by Messrs. Thome and Mertz, would be about seven feet in diameter and weigh about 1,000 pounds. Batteries would power the experiments and the telemetry for up to four days. A later version of the clamshell, for a Saturn V launch during 1975 or 1977, would be powered by a radioisotope-fueled generator for up to six months of operation.

This version would pack a scientific payload tailored for atmospheric sensing, geophysical and biological experiments, life detection, fine resolution television and analyzing the surface of Mars.

**String-along:** Another approach to a Martian landing — looking much like a string-laced flying saucer—has been sug-

gested by engineer John A. Alai, also of the Re-entry Systems Department.

What he calls a "tension string structure" was described to members of the American Institute of Aeronautics and Astronautics recently (see photo).

The ultra-light, sturdy re-entry vehicle is composed of thousands of windings of high-strength string under tension and shaped like two coolie hats cupped together. The strings are made of glass or other high-strength material with enough windings so that they present an apparently-solid surface. This is coated with a silicone material to protect against heat.

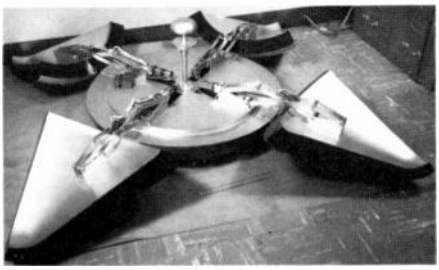
This tension string vehicle is also designed to help overcome the problem of safely landing a scientific payload on the surface of Mars or any other planet when the atmosphere is thin — similar to the earth's at 100,000 feet.

Such a thin atmosphere will not help slow down a landing vehicle, and thus the need for such a lightweight craft.

**Space Blossom:** For more advanced Martian maneuvers such as the proposed Automated Biological Laboratory (ABL), the clamshell school of thought must yield to designs allowing movement over the surface while scientific tasks are performed. The shell shape couldn't supply the levelness and flatness to launch an ABL.

What is needed, observed Mr. Thome and Mr. Merz, is a "petal" capsule. This cone-shaped lander craft is divided in four sections that would open after landing much in the same way that a flower bud opens to become a blossom.

OPEN PETAL CAPSULE



This "space flower" is more complex than the clamshell, and therefore more difficult to make as reliable, but it can be controlled more precisely. The petals can be individually controlled for capsule levelling and temperature control, and the experiments are more completely exposed.

**Space Criteria:** Regardless of which capsule is used, four characteristics should be common to all. First, that the landing capsule separate completely from the vehicle that protected it from entry heat. Second, that the capsule orient itself and deploy mechanically. Third, that the sensors and experiments be erected mechanically and electrically connected for reliability; and last, that the control of events be preprogrammed, but with the ability to override a sequence by command from earth.

According to Mark Morton, general manager of the Re-entry Systems Department, the tension string and "clamshell" lander concepts are typical of the continuing research in planetary entry underway at RSD.

"Studies and investigations of this kind are indispensable to insure the Company's continued pre-eminence in re-entry technology and to more effectively pursue opportunities for continued business growth afforded by these areas of vital national importance."

The Martian models represent a relatively small "leading edge" of work at Re-entry Systems Department. Current major projects include the Mark 12 Reentry system for the U.S. Air Force Minuteman II, NASA's Biosatellite and advanced re-entry research vehicles.

NEW FROM HOUSEWARES — Topping the longest list of new products and models from Housewares Division are the vacuum sweeper, rechargeable flashlight, and manicure set.

## PRODUCTS

### *Rites of Spring*

For much of the Consumer Products Group, spring is a time for planting the seeds of enthusiasm with distributors and retailers for the summer and fall selling seasons.

Last month, new housewares and home entertainment products were blooming in pleasing profusion. Housewares Division entered four new businesses. Television Receiver Department brought out its new line including a new model of Porta-Color.* and Radio Receiver Department introduced a set of low-priced products for the younger set.

**Housewares:** Vice President Willard H. Sahloff commented that the influx of 46 new products or models this spring, "even though the largest group we have ever introduced at one time, is just a sampling of what General Electric has in store for the future."

The products which put the division in new businesses include a food cooker (*The Monogram*, May '66), vacuum sweeper, rechargeable flashlight, and a manicure set.

The lightweight vacuum sweeper for light vacuum cleaning combines a rotary brush and suction to clean effectively on carpeting and bare floors. Suggested retail price: $27.95.

You never have to change the batteries on the new rechargeable flashlight. Its angled head, enclosing a prefocused spotlight, allows it to be positioned on side or back where it will beam a constant bright light for two hours, when fully charged. The flashlight comes with an induction charge base and will sell for a suggested retail price of $14.98.

The manicure set features a contoured power handle and five attachments, including a nail shaper, callus smoother, buffer, cuticle pusher, and cuticle brush. Suggested retail price: $19.98.

In the automatic coffeemaker line, the division has added a couple of slick touches. One is a "Mini-Brew" accessory which fits inside the standard coffeemaker basket for brewing two or three cups of

coffee. Two new coffeemakers come in an anodized color finish — turquoise blue or bronze — and may be completely immersed for cleaning.

Highlights of 19 new clocks are the Company's first cordless alarm, a "Smokey Bear" model in full color (tieing in with a TV spectacular due in the fall), and a "Terrestrial Time Clock" which determines the time anywhere in the world.

**Television:** Syracuse is marketing a new deluxe model of Porta-Color, the highly successful color portable introduced a year ago, and is offering the industry's first full-year warranty on parts and labor in event of manufacturing defects. Suggested retail price: $269.95.

The 1967 color line includes General Electric's first entries in the 19-inch size, four 23-inch consoles, three 25-inch consoles. One new feature: "Meter-Guide Tuning," to simplify color tuning.

Big news in black-and-white is a new line of transistorized portable sets with price tags starting under $100. The line includes three 12-inch sets and a 16-inch model.

**Audio:** Utica is introducing five new products for youngsters. They include a walkie-talkie, a combination radio-phonograph, a battery-operated portable phonograph that weighs just four pounds, a low-priced phonograph (suggested $16.95), and a compact Show 'N Tell* phono-viewer. All carry suggested retail prices under $25.00

**Cold Facts:** Helen Kirtland, director of the Consumers Institute at Appliance Park, answers pertinent questions for refrigerator buyers in a new "Buyer's Guide" available at General Electric major appliance dealers. If your local dealer doesn't have it, write to Dept. BG, Bldg. 4, Appliance Park, Louisville, Ky. 40225.

**Trademark of General Electric Co.*

## AROUND THE COMPANY

**Cornell Dedication:** A 50,000-square-foot building given by the Company to Cornell University last fall was officially dedicated as the Langmuir Laboratory last month in honor of the late GE scientist who was the first industrial scientist to win the Nobel Prize. Among those present for dedicatory ceremonies were Dr. Arthur M. Bueche (at left in photo), vice president in charge of the Company's Research and Development Center, and Franklin A. Long, vice president for research and advanced studies at Cornell. The building, on land owned by the University, formerly housed the GE Advanced Electronics Center now located in Syracuse. The laboratory will now be used as a major facility for the University's Division of Biological Sciences.

**Benefits Bonanza:** A record $75 million in benefits under the Company's in-

**CORNELL'S LANGMUIR LABORATORY**

*In memory of a Nobel Prize winner.*

surance plan was received in 1965 by GE employees, pensioners and their beneficiaries. The Plan's annual report reflects a $6-million increase over any previous year. Of the total cost of the plan, which hit a new high of $86.8 million, General Electric paid over $51.7 million or 59.6 percent, with employee payroll deductions amounting to 40.4 percent or about $35.1 million.

**Motorcade:** One of the Company's motor customers, the Brown Company of Berlin, N.H., had 54 visitors last month — all employees of the Large Generator and Motor Department. A highlight of the tour — emphasizing applications of GE motors in a paper mill—was the presentation of the first unit of a recent large motor order complete with a card signed by 100 employees who worked on the motor. Host for the visit was Brown Company President Frank T. Peterson, and LG&M general manager George B. Woods led the Schenectady contingent.

**Top Spanish Order:** A $20-million contract to supply the largest single electric generating unit ever ordered for Spain has been received by IGE Export Division. A 380,000-kilowatt steam turbine-generator unit and associated equipment will be supplied to Ibderduero S.A., Bilbao, Spain for use in its new Santurce thermal power station on the northern coast.

**Care from X-Ray:** An order for ten mobile x-ray units has been received from CARE Incorporated, the world relief organization by the X-Ray Department. The units, for shipment by CARE to Poland, will include x-ray equipment, portable generators and testing laboratories for use in a variety of localities.

**Adding On:** Two new additions were announced this month: a $2-million expansion of the wire mill at the Distribution Transformer Department in Pittsfield and a new 47,500-square-foot warehouse addition at the Hotpoint Home Laundry Department in Chicago. The construction and additional equipment will help meet anticipated business needs of both locations.

**Irish Plant:** The Semiconductor Products Department in Syracuse announced last month that it is forming a new company, ECCO, Ltd., to manufacture small electronic components used mainly in transistorized radios and television sets. General Manager James R. Donnalley said the new firm plans to purchase a manufacturing facility located in Dundalk, County Louth, in the Republic of Ireland.

**With Honors:** An excellence award for contributions to the diamond grinding wheel industry went to the Company's Diamond Business Section in Detroit from the Diamond Wheel Manufacturers Institute. . . . Apollo Support Department received NASA's first award for "an outstanding small business program" for awarding nearly 50 percent of its procurement dollars to small business firms in 1965. . . . The Meter Department presented Con Edison with a golden watthour electric meter commemorating the utility's three-millionth alternating current active meter installation, the only utility in the world to reach this milestone.

**Program Note:** "Sportsman's Holiday," a new half-hour network show in color will be sponsored by Housewares Division beginning June 19. The program will be telecast Sundays at 5:30 p.m. (EDST) on NBC-TV and run for 13 weeks. Host will be veteran sportcaster Curt Gowdy, with filmed sequences with famous outdoorsmen including Ted Williams, Lee Wulf, Mort Neff, Bill Plummer and others.

# TALKING POINTS

## *Stay Tuned*

The day will come when you'll be slipping a radio into your pocket every morning along with your wallet and car keys.

So says John S. Chamberlin, marketing manager of the Radio Receiver Department, who may be accused of wishful thinking. But Mr. Chamberlin thinks he's on the right wave length.

A battery-powered transistor radio is fast becoming a personal necessity, claims Mr. Chamberlin, because it's the only practical device to keep the average citizen in contact with the rest of the world regardless of power failures or natural calamities.

He notes that the Federal Communications Commission, following a study prompted by last fall's power failure in the northeast, called for a campaign "to persuade the consumer that a transistor radio is a necessity in every home."

As a matter of fact, adds Mr. Chamberlin, the youngster with his ear glued to his radio is better prepared than most.

## *Audrey Who?*

Now we've got a computer talking. And, as you might have guessed, it's a she.

It all happened at the Valley Forge Space Technology Center, where people are accustomed to far-out developments.

To talk to AUDREY (that's her name, for AUDio REplY), you have to have a card and a touch-tone telephone, which Bell Telephone is now introducing.

First you dial the computer's telephone number (you'll have to get it from AUDREY). Next you enter your card which transmits your user number so AUDREY can check your credentials. Then AUDREY is prepared to converse, and, as the saying goes, it's your nickel.

**THAT YOU, AUDREY?**
*Facts from your friendly computer.*

A feminine voice announces, "This is AUDREY," and you can ask a question, request stored information, or perform calculations by entering a program number with the touch-tone buttons. AUDREY's answers, in the same feminine and uniformly pleasant voice, are drawn from words in her stored vocabulary. (In the photo above, Vice President Hilliard V. Paige chats with AUDREY after Lou Cimino, manager of the information systems and computer centers section at Valley Forge, has entered his card in the touch-tone phone.)

Points out Mr. Cimino: "When our engineers or scientists travel to customer plants, military sites, or on general business trips, they can use AUDREY from any location that has a touch-tone telephone available."

It sort of makes a fellow feel at home.

# ON CAMERA

**GE SALES DOLLAR** and where it goes is illustrated above by these Allentown, Pennsylvania people: From left, Helen E. Lozensky represents Company employees who receive 40 cents of it; Rodney K. Schlauch, a GE supplier, holding a 48-cent portion; John Bayer, a GE general accounting supervisor, with six-and-a-half cents paid in taxes; Ed Corkery, plant accounting manager, with a two-cent portion that represents plant reinvestment; and Bernetta Ellis, a GE shareowner, who gets about three-and-a-half cents as a dividend.

**AT TOKYO SIGNING** of a $56.1-million contract between Japan Atomic Power Company and IGE Export Division for design and construction of Japan's largest power station at Tsuruga, Fukui Prefecture, Mr. T. Ipponmatsu, (right) president of JAPC, bows to Hoyt P. Steele (left) vice president and general manager of IGE Export Division. The power station, 200 miles west of Tokyo, will have a potential net rating of 342,000 kw.


**STELLAR SHOVELMEN.** Officially breaking ground for a $15-million expansion of the Electronics Park cathode ray tube operation last month were these GE and community representatives holding specially-marked shovels. Among the participants are John B. Prescott, left manager of the new facility and Richard E. Christie, right, general manager of the Television Receiver Department. The 90,000-square-foot building will include equipment to manufacture monochrome and large color picture tubes.

**RARE COIN COLLECTION:** Dorothy Fitzgerald, a secretary at the Advertising and Sales Promotion Department's midwestern accounts operation, inspects some "rare and ancient coins"—part of 27,000 given away by General Purpose Motor Department to emphasize the lasting value of its Form G and Mina-gear® motors. The direct mail campaign used coins spanning 40 centuries and led to enthusiastic response from salesmen and customers.

**ELECTRONIC GROUNDBREAKING:** Comptroller Robert E. Pfenning signals the start of construction equipment via a card-controlled remote device during Schenectady ceremonies last month marking the start of a new Computer and Communications Center. The 46,000-square-foot, all-electric building will house nearly $5 million in computer equipment plus headquarters for the Company's world-wide telephone and telegraph system.

**PEGASUS PARADE:** About 175,000 persons viewed this Appliance Park float in the 11th annual Derby Week Pegasus Parade in Louisville. Theme of the GE float was "Festival of Halloween," with a salute to UNICEF. The attractive trick-or-treaters on the float are all Company employees at Appliance Park.

# PEOPLE

**Rare Honor:** Three blind college students—each graduating with high distinction and elected to Phi Beta Kappa—received $500 annual scholastic achievement awards of Recording for the Blind, Inc. from President Johnson last month. The winners: (from left in photo) Ronald A. Denis of Salem, Mass., Karen Louise Gearreald, Norfolk, Va., and Barbara Ann Bowman of Bethel Park, Pa. Viewers of the General Electric College Bowl may recall Miss Gearreald's appearance when she was announced as a Harvard Fellowship winner on the program (*The Monogram*, March '66). Mr. Denis is the son of Mrs. Albert Denis, who is a 21-year employee at the Company's Everett plant.

**Golden Anniversary:** Peter F. Barth, supervisor of order service at the Company's East Orange, N.J., office completed 50 years of service on May 26. Observed Mr. Barth, the one unchanging thing that has kept the Company growing is customer service.

**Belated Bronze:** Like many GE employees, Edward J. Wisdo, warehouse supervisor for GESCO in Newark, N.J., served in World War II, including the Battle of the Bulge. When he was discharged 22 years ago, he chose to pass up well-earned honors because of a conflict with his discharge date. A fellow GE employee recently suggested to former PFC Wisdo that he could still obtain these via the Adjutant General's Office in Washington. A curious civilian Wisdo contacted the office and soon received a belated Bronze Star Medal and Presidential Citation (among five other awards) for "meritorious achievement in ground operations against the enemy."

PRESIDENT JOHNSON AND WINNERS

*Despite handicaps: high honors.*

**Family Department:** Semiconductor Products Department in Syracuse may be the only General Electric component with two husband-and-wife teams on its engineering staff. They are Steven and Ingrid Magdo, who are natives of Hungary and Austria, and Tej Raj and Shiromani Goel, who were born in India. All four say they're happy they picked GE. Job hunting for two, comments Mr. Goel, is "a four-body problem—two of us and two managers for each interview and all have to be satisfied."

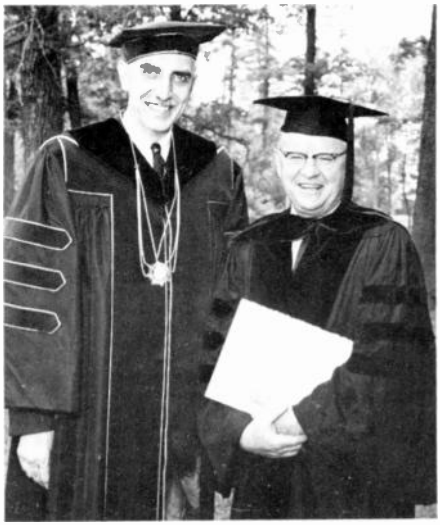
**Fellow:** Dr. Douglas St. Pierre, a ceramist at the Company's Research and Development Center, has been elected a Fellow of the American Ceramic Society.

**Stellar Seller:** Cliff Bruya, a sales engineer for Industrial Sales Division, was recently named "Salesman of the Year" by the Purchasing Agents Association of Washington State.

**Academy Member:** Francis K. McCune, Vice President, Business Studies Service, has been elected to the National Academy of Engineering. The Academy serves as an advisor to the Federal government in matters relating to science and technology.

**Degrees:** Chairman of the Board Gerald L. Phillippe received an honorary Doctor of Laws degree from Union College this month during commencement ceremonies at Schenectady. Mr. Phillippe's son, J. Richard, is a freshman at Union, which celebrates its 171st year this month . . . Dr. Thomas A. Prater, manager of the metals processing unit at the Research and Development Center, received an honorary degree of Professional Engineering from the Montana College of Mineral Science and Technology . . . Arvid E. Anderson, retired GE engineer and inventor, received the honorary degree of Doctor of Engineering last month from Worcester (Mass.) Polytechnic Institute. A 40-year employee, Mr. Anderson was formerly manager of engineering in the materials and processes laboratory at the Switchgear Department, and now resides in Havertown, Pa.

MR. PHILLIPPE as he received honorary Doctor of Laws degree. On left is Union College President Dr. H. C. Martin.



WHITMAN RIDGWAY L. BERKLEY DAVIS

## ORGANIZATION

### Defense Programs

L. Berkley Davis has been appointed General Manager of the Defense Programs Division. He will continue as acting division general manager of the Electronic Components Division until further notice.

### Gas Turbine

Whitman Ridgway has been appointed General Manager of the Gas Turbine Department.

Mr. Ridgway succeeds Alan Howard, who died last month.

### Treasury Operations

Leslie I. Asher has been appointed manager of Treasury Operations.

Mr. Asher succeeds Albert O. Hillman who retired June 1 after 41 years of General Electric service.

## LETTERS

*(Continued from inside front cover)*

criteria stressed reduced costs, comprehensiveness of program and uniqueness of method.

LOU ZIMMER
Re-entry Systems Department
Philadelphia, Pa.

## EDITORIAL

# Visit to Japan

IN THE PAST, Japanese competition has had no major effect on the U.S. cable market, General Manager Theodore C. Ohart told his Wire and Cable Department employees in the *Bridgeport GE News* last month.

But last year Mr. Ohart visited Japan, and he's worried now. And for an interesting reason—the Japanese have stopped copying our products and have begun to copy our manufacturing methods.

In years past, Mr. Ohart explained, the Japanese have had more people in offices and factories than required, and many kept their jobs for life, regardless of their abilities and efficiency. Thus, though Japanese hourly pay rates were one-third ours, they had three people doing each job, and total labor costs were in approximate equilibrium.

But all this is changing. The traditional, paternalistic pattern in Japanese industry is giving way to modernization and automation that allow one man to do the job of three or more.

And the result has been good for Japanese workers as well as businessmen. For, Mr. Ohart notes, pay rates have been rising, but labor costs are coming down fast. And the excess people are working on new jobs in Japan's fast-expanding economy.

There's another bonus for Japan in automation, too. The modernized factories turn out better products. Mr. Ohart reports that the Japanese are designing their own wire and cable these days, and the product is good, even by our standards.

The Japanese are wasting no time in parlaying these new strengths into increased leverage on world markets. Mr. Ohart points, somewhat nervously, to an order for 83,000 feet of cable for the city of Glendale, Cal., which his department lost to Japanese competition last year.

The message is clear to Mr. Ohart's department, and it's getting through in many other General Electric businesses. If we want to continue to earn the world's highest standard of living, we are going to have to change faster than the Japanese.