



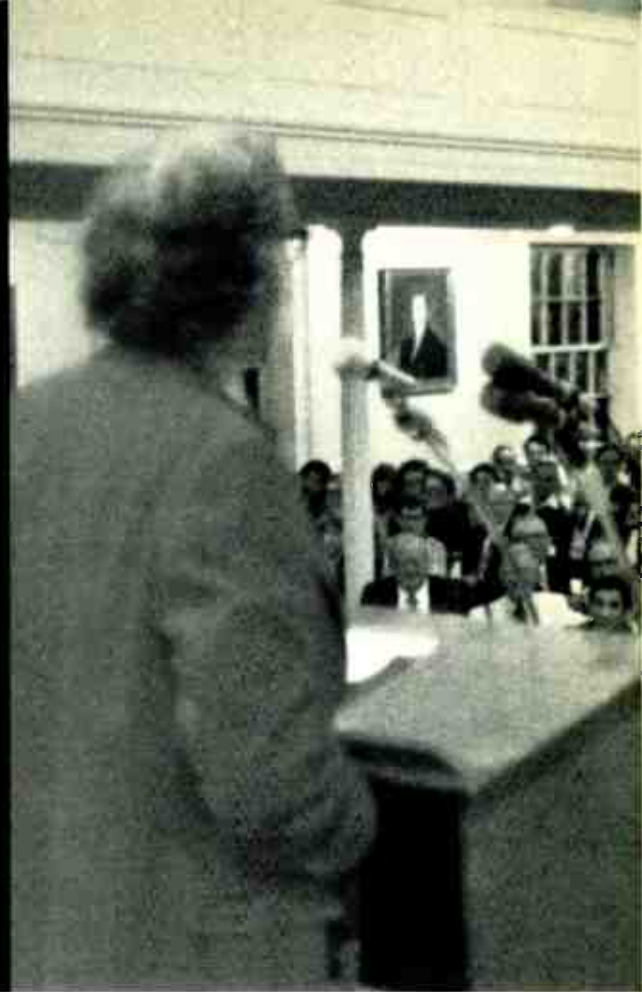
GENERAL ELECTRIC
Monogram
NOVEMBER-DECEMBER 1978

**Coming in the
second century:
the
GE-equipped
electric car**

**PLUS: Centennial's peak,
science symposium,
GE's food businesses**

Hosting science's leaders

GE-sponsored, Centennial-related symposium focuses on breakthroughs in GE's second century.



GENERAL ELECTRIC
Monogram

November-December 1978

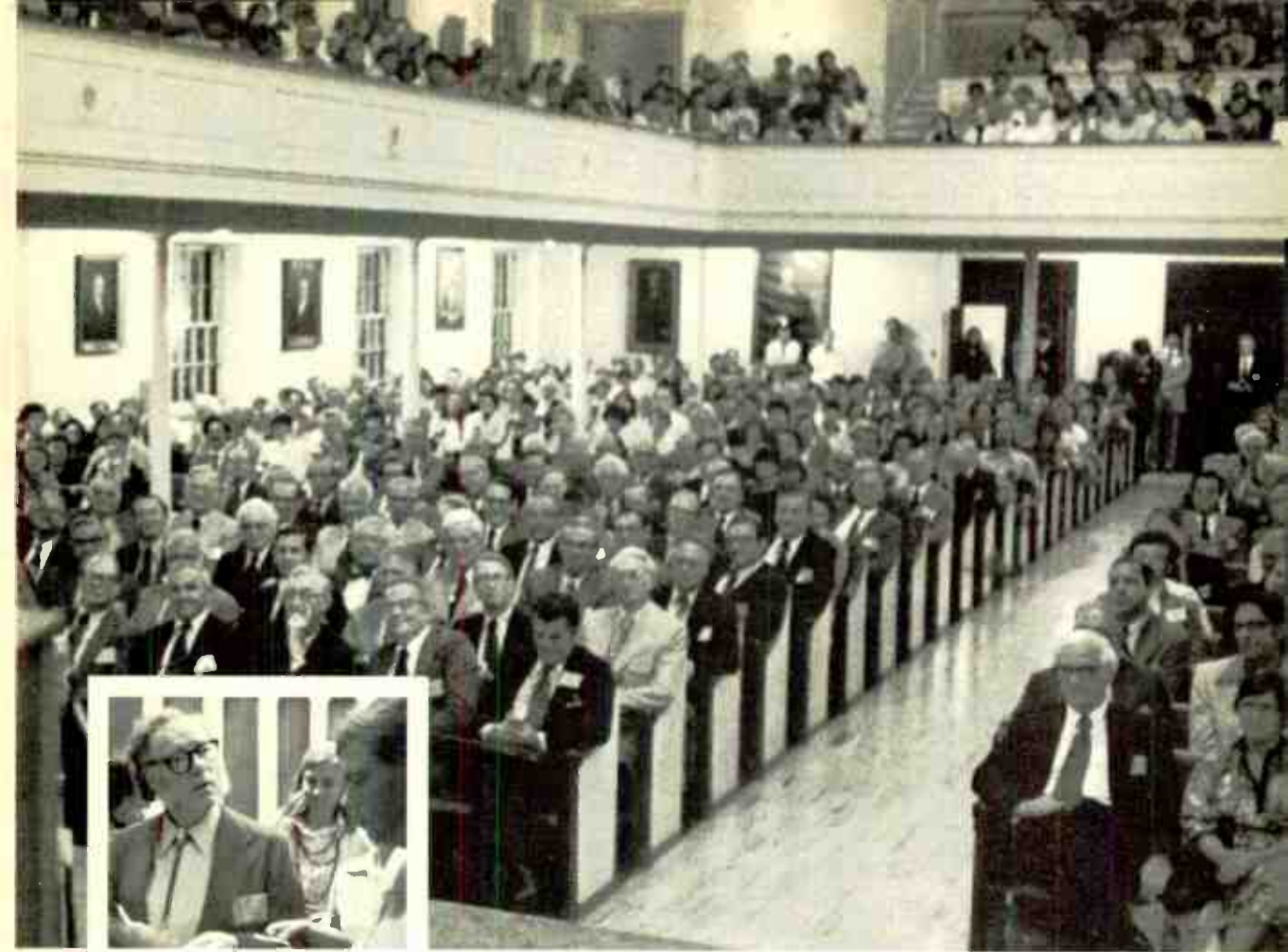
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**Dr. Isaac Asimov—
probable future paths**

Science author Dr. Isaac Asimov spoke before a full house Sept. 20 as he discussed "Probable Paths to 2078" at Schenectady's Union College Memorial Chapel during GE's Centennial scientific symposium. Dr. Asimov remarked: "Virtually every significant social change down through history has resulted from a technological advance. Such technical tools as the metal stirrup, moldboard plow, printing press, rocket and computer have ushered in dramatic social development."

He continued: "During the next 100 years, such new tools as space stations and laser communications will benefit society, if mankind joins together in imaginative technological ventures. We live in an interdependent world—one ocean, atmosphere and environment. The next century may determine whether we reach 'cosmic adulthood' and venture forth from cradle Earth—or face another Dark Age of self-doubt and war."

Into Schenectady on September 19 came a distinguished cross-section of the scientific community from around the world. Their purpose: to participate in the International Symposium on Science, Invention and Social Change, sponsored by General Electric in conjunction with the GE Centennial celebration.

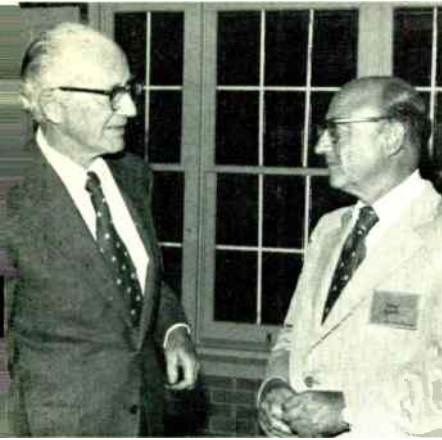
Attendees obviously saw the symposium as an unusual opportunity to meet associates in many different disciplines and from many different countries. On hand for the two days of meetings in the Schenectady/Albany area: 172 of today's leading scientists, entrepreneurs, writers and governmental advisers, from 13 countries—including 34 members of the U.S. National Academy of Sciences, 45 U.S. National Academy of Engineering members, and 15 foreign academy members.

It was perhaps the most distinguished group of technical people ever assembled by General Electric.

Dr. Arthur M. Bueche, GE Senior VP—Corporate Technology and the symposium's general chairman, stated the objectives: "to note the past, learning from it; to observe the present scene, enlarging our perspectives through the exchange of ideas; and to predict the future, seeking insights that will help shape its direction for the benefit of mankind around the world."

Technology's past was noted in the opening address, "Edison

(continued next page)



GE's Dr. Milan Fiske (far left), coordinator of the symposium, discusses arrangements with Senior VP Dr. Arthur Bueche, the symposium's general chairman. Above, VP Dr. Roland Schmitt of the R&D Center reconvenes the conference for the second day's sessions. The meeting's opening speaker was Dr. Guy Suits (right), GE director emeritus of research.



and a Century of Innovation," by GE director emeritus of research, Dr. C. Guy Suits. Dr. Suits explained how Edison translated scientist Michael Faraday's earlier electrical researches into beneficial products, thus bridging the practical-application gap.

Status reports on the present came in a series of talks at the Research and Development Center on the "Contemporary Frontiers of Science," with Dr. Philip Handler, president of the U.S. National Academy of Sciences, presiding. He observed that "the 1978 Government R&D budget is down—not because of disenchantment with science, but as a result of California's Prop. 13. Science is being looked at more closely by the public, and for the scientific community to successfully undertake new endeavors, it must involve the public in its plans."

"The Inventor and the Entrepreneur" were the symposium's next focus, chaired by Dr. Ralph Landau, chairman of Halcon International, Inc. Stated Dr. Landau: "America's technological dominance since World War II has blinded many people to the fact that continued R&D spending and risk-taking are essential for maintaining our competitive position. Many of today's economic and political 'experts' refuse to see that new technology produces capital increases, and that taxation discourages capital investment."

Shifting to the future at the symposium, Dr. Isaac Asimov (see page 3) keynoted the meeting's third area of investigation by speaking on "Probable Paths to 2078" in a lecture at Schenectady's Union College Memorial Chapel.

"Great Technical Challenges for the Next
(continued on page 7)



Affording a chance for GE people to meet a cross-section of today's leading scientists and educators, the symposium was attended by numerous GE executives. Senior VP Dr. Charles E. Reed (far left) visits with Rensselaer Polytechnic Institute President and GE Director George M. Low. VP James F. Young (below) chats with guests during a coffee break.



The R&D Center's Dr. Ivar Giaever (above) visits with a colleague during a symposium session break.



Session on "Contemporary Frontiers in Science"

Dr. Philip Handler—Session chairman



**Professor Victor Weisskopf—
on physics**

Reviewing the "growth points" in non-linear, heavy-ion, astronomical and particle physics, MIT Professor Victor F. Weisskopf noted a number of "knowledge gaps" in the latter area, his specialty: "Our world is made up of electrons, protons, neutrons, quarks, mesons and neutrinos—but we still don't understand their electromagnetic forces." He added: "Astrophysics fascinates the public the most, as here are found the riddles of the universe."



**Professor Melvin Calvin—
on chemistry**

"Chemistry is passing through a critical phase today and is losing some of its identity to physics and biology," stated Nobel Laureate Melvin Calvin of the University of California. "Because of the recent attention given to toxic substances, even the term 'chemical' now carries a bad connotation." Among present chemistry frontiers? "A great breakthrough will come when we understand a cell's chemical-induced transformation into a cancer cell."



**Professor Francis Crick—
on biology**

Nobel Laureate Francis H. C. Crick of the Salk Institute, citing present research in the fields of molecular, cell, developmental and neurological biology, noted that the term "gene" is now too simplified a scientific term for the chromosome units which determine hereditary characteristics. Among biologists' present concerns: "We are still studying protein sequencing and interaction, how viruses take over a cell, and the many questions concerning human consciousness."

Session on "The Inventor and the Entrepreneur"

Dr. Ralph Landau—Session chairman



**Dr. Alejandro Zaffaroni—
developing a new product**

Describing new pharmaceutical tools used as controlled-delivery drug systems for eye therapy, birth control and vertigo and nausea treatment, Alza Corporation President Dr. Alejandro Zaffaroni emphasized "the extensive educational program that must be conducted among regulatory officials and doctors before such medication-dispensing equipment can be marketed. A company's R&D must be 'sold' even before its product."



**Sir Alastair Pilkington—
encouraging inventions**

"For companies to be successful, they first must recognize the value of R&D spending," commented Sir Alastair Pilkington, chairman of Pilkington Brothers, Ltd., of Great Britain. "R&D must not be seen as 'overhead,' but as an intrinsic means of corporate capital formation." He continued: "A new idea must be treated gently—matured ideas ruthlessly. R&D must always show worth for effort."



**Jack Kilby—
the individual inventor**

"When an inventor undertakes to develop his idea, he rarely can prove that his product is viable—and *never* that it will sell," stated inventor and consultant Jack S. Kilby. "Through the ages, great perseverance has been required of such inventors as Edison at all stages of their products' development—from finding the right corporate 'home' for their inventions to seeing their ideas through to successful application."



Session on “Great Technical Challenges for the Next 100 Years” Dr. Courtland Perkins—Session chairman



**Dr. Lewis Branscomb—
on communications**

IBM Corporation's Dr. Lewis M. Branscomb, vice president and chief scientist: "Within several decades, we will talk directly to computers. These computers also will read by pattern recognition, and will write using ink jets and laser photography. We even will build computers that replicate themselves. A computer will take your foot dimensions and, through computer-aided-manufacturing, produce custom shoes for you at mass prices."



**Dr. Ishrat Usmani—
on energy**

"The developing world's need for energy can be illustrated by the fact that, even after 100 years, we still don't find Edison's incandescent lamps in thousands of villages," stated Dr. Ishrat H. Usmani, senior energy adviser for the UN Center for Natural Resources, Energy and Transport. Dr. Usmani proposed a global rural electrification program which might employ solar photovoltaic systems, windmills and biomass techniques for electric power.



**Dr. William Darby—
on food and nutrition**

Dr. William J. Darby, president of The Nutrition Foundation, Inc.: "When we look back in history at the number of food-deficiency diseases such as goiter, rickets, scurvy, anemia and pellagra, we can see how far nutritional health has come." The future of nutrition science? "Hopefully, along with new breakthroughs in the production, fortification and presentation of food can come the education necessary to help consumers resist harmful 'food faddism' appeals."



Panel on “Role of Government in Using Technologies for
Dr. Jerome Wiesner—Panel moderator



**Dr. Frank Press—
the U.S.**

Science adviser to President Carter, Dr. Frank Press, chronicled some Administration concerns: rising costs of research and education, and the shift from exploratory to defensive research (e.g., environment and safety regulations). "In many cases, Washington *has* intruded too much into society. The recent airline-fare deregulation illustrates the positive impact Government can have."



**Dr. Enrique Martin-del-Campo—
Mexico**

"Technological progress affects a society's distribution of wealth, so any government R&D involvement must vary from region to region," declared Dr. Enrique Martin-del-Campo, science counselor for the Mexican Embassy in Washington, D.C. He told the group that "incentives for students of developing countries to return home after being educated abroad must be increased significantly."



**Dr. B. D. Nag Chaudhri—
India**

Professor B. D. Nag Chaudhri, vice chancellor of India's Jawaharlal Nehru University: "India's R&D budget is about the size of those of some large U.S. firms. Faced with problems of poverty and of energy shortages, my Government's role is clear—to promote agriculture and industry." He continued: "Cooperative research centers in industrialized nations are needed to transfer technology to those who need it most."

100 Years” formed the theme of a series of addresses at Albany’s Empire State Plaza, chaired by Dr. Courtland D. Perkins, president of the U.S. National Academy of Engineering. Dr. Perkins remarked that “it’s impossible to predict technological advances or a new tool’s eventual impact. People tend to be overly optimistic about what technology can do in the short term, and pessimistic about the long term.”

“The Role of Government in Using Technologies for Social Progress” represented the symposium’s next topic, with MIT President Dr. Jerome Wiesner chairing the panel session. Governmental science advisers from four countries—the U.S., Great Britain, India and Mexico—served as panelists. Noted Dr. Wiesner: “Serious doubts exist as to whether many recent laws enhance or inhibit technology. Regulations often are enacted in the absence of knowledge, and when they don’t work, their failure is not admitted.”

Following this panel discussion, a session devoted to “summary and predictions” was led

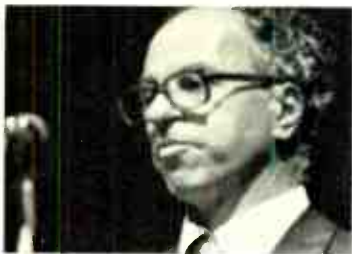
by Albert Rosenfeld, science editor of *Saturday Review* magazine.

The symposium’s final address was given by GE Board Chairman Reginald H. Jones. Discussing the “Conditions for Technological Progress,” Jones emphasized today’s need for greater Government incentives for corporate R&D spending—and a more attractive risk-reward ratio for both corporate and individual investors. He concluded on an optimistic note:

“Any objective assessment of today’s situation would have to include the positive factors:

- The grand momentum of science and technology, a human enterprise that transcends national and cultural boundaries.
- The growing awareness around the world of what it takes to achieve and sustain technological progress.
- The persistent rejection, by most people, of the counsels of despair.
- And, most importantly, the irrepressible curiosity that keeps drawing mankind forward toward new knowledge, new ways of doing things—as demonstrated at this symposium.”

Social Progress”



**Sir Hermann Bondi—
Great Britain**

“Government must serve both as a catalyst and a policeman,” observed Professor Sir Hermann Bondi, chief scientist for Great Britain’s Department of Energy. “We can’t live without the policeman, but positive change must constantly be encouraged. Overcaution stifles progress.” He added: “One of the strengths of the American scientific community is the mobility of ideas and people between institutions.”



GE Board Chairman Reg Jones (above) greeted symposium guests at final banquet held at Albany’s Empire State Plaza. *Saturday Review*’s science editor, Albert Rosenfeld (left), conducted a “summary and predictions” session following the second day’s panel discussion.

The Centennial peak



Employees display enthusiasm through GE100 programs as varied as the operations sponsoring them.

Actor Pat Hingle reenacts Edison trip to Greenfield Village

One of Pat Hingle's final Centennial performances as Edison came Sept. 30 in Dearborn, Mich., at the Henry Ford Museum and Greenfield Village—where Edison's Menlo Park and Ft. Myers laboratories are preserved. As a 50-year commemoration, Hingle reenacted an historic 1928 meeting between Edison and Henry Ford. Shown examining Edison's original phonograph in the Menlo Park Lab: Hingle with Carboly Systems Department's general manager, J. Richard Stonesifer (right), and Robert A. Alukonis, national sales manager.



GE \$10,000 donation helps restore Edison home

Sometime during the bleak winter months of 1866-67, Thomas A. Edison moved to Louisville where he worked for Western Union as a telegrapher. His lodging while there? A small brick dwelling at 729 E. Washington Street, a short walk from his job. Today, thanks to a General Electric \$10,000 donation and other Federal and City support, a private corporation is restoring Edison's Butchertown-area house to the 1866 period. Shown supervising the refurbishing: curator Dottie Carle.

Centennial health tests a big hit in Philadelphia

Employees started queuing up before work the first day. That's when Dr. Francis J. Marx, medical director at Philadelphia's Switchgear and Distribution Transformer Division, knew he had a winner. As a GE100 gesture, Dr. Marx in June began a five-month, free-health-exam program aimed at employee physical assessment. Various health organizations have since lauded him for this activity. Here, he checks the blood pressure of secretary Dotty Galuppi.





GE's 'Progress' travels to hot-air balloon festivals

At the recent annual Adirondack Hot Air Balloon Festival in Glens Falls, N.Y., Hudson Falls' Capacitor Products Department sponsored the R&D Center's Centennial balloon in the day's aeronautic endeavors. Unhampered by dense fog that blanketed the festival

grounds, the crew of GE's "Progress" valiantly manned its station in anticipation of the free-flight race—only to see the race cancelled by inclement conditions. The crew *did* make a tethered lift-off amidst scores of fascinated bystanders.



'GE 100' is everywhere— even on automobiles

The State of Illinois doesn't sell "vanity" license plates. That is, it doesn't cost more to have certain letters on a plate. Realizing that numbers were being assigned on a "first come, first served" basis, Springfield, Ill., public affairs manager C. A. "Chuck" Willsey months ago rushed to reserve the letters "GE 100." Shown here, Illinois Secretary of State Alan J. Dixon (right) presents the special plate to GE's C.J. "Chuck" Meloun, VP—Central Regional Relations.



Milwaukee's GE100 art show: paper sculpture to Indian art

Medical Systems Business Division's recent Family Art Show in Milwaukee enabled hundreds of GE families to join in the Centennial celebration. Above, Monica Stevens, 8, daughter of Richard J. Stevens, won a first prize for her paper doll, "Tiki God." The Division hired graphic artist Suhas R. Pawar (left) to create an Indian Rangoli painting (produced with colored dust), which depicts GE's health-care products.

(continued next page)

**At Lynn's Family Day:
Centennial 'horsepower'**

When you've got a big day planned with a lot to see—and 45,000 people who come to see everything—how do you help move crowds from one exhibit area to another? One creative solution: a "three-horsepowered" trolley. Lynn's GE Centennial committee says the vintage transportation worked fine at the Industrial and Marine Steam Turbine Division's GE100 Family and Community Day on Sept. 23.



Minnie Harrington, age 101, celebrates her 'second' Centennial Schenectady GE pensioner Minnie Harrington, who celebrated her 100th birthday in 1977, was recently on hand to help GE commemorate *its* Centennial year. The occasion was Schenectady's Quarter Century Club outing, held at Altamont Fairgrounds.

Minnie was the outing's guest of honor, and was escorted by Schenectadyites Phil Newell (left) and Mary Gosselin.



Syracuse: GE100-sponsored symphony concerts

The house lights dimmed, audience chatter ceased, and Alexander Schneider, who has wielded his baton with some of the world's finest orchestras, walked on stage. On Oct. 6 and 7, he conducted the Syracuse Symphony Orchestra at concerts sponsored by Syracuse

GE in honor of the Company's Centennial. And before each performance, GE took some bows as the orchestra saluted the Company for its many years of local cultural support. For the capacity-crowd Syracuse concerts, 250 tickets were awarded to GE employees.

Milan, Ohio: GE-donated lights for Edison High

It was Edison High's first night football game, made bright by Hendersonville's Lighting Systems Department as a GE100 project. At the Sept. 9 pre-game ceremony in Milan, Ohio, were James A. Baker, VP and group executive—Lighting Business Group (at lectern), and Carroll B. Sanders, school principal.



**'Up With People' hosted
by 1700 GE families**

Between Sept. 1 and Oct. 15, three "Up With People" troupes appeared before 201,250 people at 188 Centennial performances in 42 communities. And throughout GE, 1700 employees were overnight hosts for cast members on the busy tour routes. Among the first GE "host families" were the Kobes of Tyler's Central Air Conditioning Plant. Shown are: Mike Kobe (left); UWP singers Jean Eletto and Kelly DeJarnett; and Eloise and Don Kobe (right).



GE Uruguay: helping to fund a rural school

A coincidence spawned the idea. In Montevideo, Uruguay, the leading newspaper, *El País*, was preparing to celebrate its 60th anniversary; the popular Radio Oriental its 50th; and, of course,

GE's affiliate, the Company's 100th. Their combined "happy birthday" project? Funding a fully-equipped school in a rural town that will be selected by

Uruguay's National Education Council. As part of the program, the triumvirate also is sponsoring a 16-week series of lotteries. Above, schoolchildren frolic among thousands of entries to one such lottery.

**Pittsfield: 'Silent Preview'
of GE100 Open House events**

On Sept. 15—the day before 16,000 Pittsfield people turned out for Ordnance Systems Department's GE100 Open House—eight hearing-impaired youngsters were treated to a "Silent Preview" of the event, where three hearing-impaired GE hosts encouraged the guests to consider future careers in industry. "Silent Preview" was conceived by engineer Dave Evans (left).

(continued next page)





Will Evendale's GE100 cake make Guinness Book of Records?

A cake as long as a football field? Right. For its recent GE100 Open House, Evendale's Aircraft Engine Business Group hired a local vendor to bake "a simple white cake" —using 1350 lbs. of cake mix; 1872 lbs. of powdered sugar; 275 lbs. of shortening; six quarts of flavoring; three quarts of liquid coloring; 51 ounces of paste food coloring; and 312 feet of ruffle trim. Shown (l to r): GE VP Raymond F. Letts; Clifford Hall, the cake's designer; and escorts Bonnie Rothenbusch, Janice Gray and Pam Whitis.



Behind the scenes of the GE100 multimedia show

What most people *didn't* see as they enjoyed the GE100 multimedia show, "100 Years of Progress for People," was the elaborate work behind the scenes: the operation of 16 computer-controlled projectors on three screens, with precision stage lighting and theatrical effects provided by traveling audio/visual professionals. Specially-trained crews set up the equipment in 12 hours and disassembled it in six. Each theater was checked even before the 42-city tour began.



In Wilmington: renovating a local park

Carrying on a Company tradition of community involvement, employees of Wilmington, N.C.'s Nuclear Energy Products Division facility are celebrating the Centennial by renovating a local girls' club park. Organized by

NEPD's Joyce M. Ruffin, 50 employees have donated materials and spent 400 hours repairing a clubhouse and building swings, picnic tables, a tree house and a baseball diamond. Work is scheduled to be completed by year end.



Tom Edison a Canadian?

Only an historical quirk sent his father fleeing south of the border.

Joining in GE's Centennial celebration, Canadian General Electric has pointed up a near-forgotten bit of history: how close Tom Edison came to being a Canadian.

The fact is that it was only the result of an unsuccessful attempt to overthrow the government of Upper Canada that sent Edison's father fleeing across the border.

Edison's family ties in Canada go way back. Originally of Dutch extraction, the Edison forebears settled in New Jersey in the 1730s, during the critical period leading up to the War of Independence. They fled to British-held New York on Oct. 20, 1776, because staunch Loyalist John Edison refused to take the oath of loyalty to the new regime.



Courtesy Metro Toronto Library Board

Edison's father had to flee from Canada to the U.S. after the unsuccessful Upper Canada Rebellion of 1837 (above). Canadian General Electric's Phyllis Edge (below) stands beside a plaque marking the location of Montgomery's Tavern, where the rebels laid their plans.



In 1783, they left New York for Digby, Nova Scotia, where for 28 years they battled inhospitable conditions in that rugged country—before putting down roots in Upper Canada (now Ontario). The Edison settlement prospered and became the community of Vienna, a thriving lumber town near Lake Erie.

Thomas Edison's father, Samuel Ogden Edison, Jr., was born in Digby and, when he married, chose Nancy Elliott, a Vienna schoolteacher.

Samuel, Jr., tried several



The Edisons homesteaded in Ontario in 1811, developing the community of Vienna into a thriving lumber town. Today it's a quiet village, off the beaten track, near Port Burwell. Thomas Edison visited here often.

trades and ended up as a tavernkeeper. His Vienna tavern became a gathering place for local reform-minded dissidents—people distressed and outraged by Upper Canada's "family compact" type of government, whereby a group of prominent Tory families virtually ran things.

Leader of the radical wing of the Reform Party was William Lyon Mackenzie. Meeting at Montgomery's Tavern four miles north of Toronto, Mackenzie's secret committee laid plans to "occupy Toronto" on Dec. 8, 1837.

But somebody talked; word got out. The rebellion date was advanced a day to Dec. 7. But because of poor communications, not everyone got the word and the rebel force that gathered that day was much smaller than planned.

Undaunted, they started a halfhearted march on Toronto. By chance, they ran into some

soldiers who were either on patrol or going on leave. A mild skirmish ensued, the rebels fled in disorder, and the revolt was over.

News of the fiasco came to Sam Edison, Jr., as he was marching on Toronto from the southwest with another group of rebels. They dispersed through the woods, hotly pursued by government soldiers. Tom Edison's father reportedly ran 75 miles in just over two days to reach the American border and cross the frozen St. Clair River ahead of his pursuers.

Shortly thereafter, a declaration was posted throughout Upper Canada, listing the luckless insurgents wanted "for the crime of high treason." The long list of names included that of Samuel Edison, Jr. By the time Thomas Alva Edison was born, on Feb. 11, 1847, the Edisons were residents of Milan, Ohio.



Monographs

100 patents each. During General Electric's first century, some 15 Company inventors earned 100 or more patents. Those 15 employees include two who achieved that magical number in GE's Centennial year: Major Appliance Business Group's John Bochan and the R&D Center's Dr. Fred F. Holub—who were granted their 100th patents by the U.S. Patent Office in September and October.

In honor of the event, Board Chairman Reginald H. Jones (right) invited Bochan (left) and Dr. Holub to Fairfield Nov. 1 to receive certificates marking their informal induction into a GE inventors' circle which includes Edison, Alexanderson and Thomson.

Bochan's inventions include the GE Filter-Flo® washer



recirculating system and the Mini-Wash® small-and-delicate fabric wash system. Among Dr. Holub's inventions: new flame-resistant insulation systems for electrical products; a new method by which vinyl polymers are chemically modified to make high-performance GE plastics; and (a co-invention) the radiation switch for the

FlipFlash® photo flash unit.

GE has led the list of companies receiving U.S. patents every year since records have been kept. Over the years, GE inventors have been granted more than 50,000 patents, and they are producing more at almost a thousand a year—nearly four patentable inventions every working day.

'Happy birthday, AMMS!' In March 1953, at the old Madison Square Garden in New York City, GE's Advanced Marketing Management Seminar made its training-program début. On hand at Crotonville Oct. 11 to help celebrate 25 years of AMMS instruction: Board Chairman Reginald H.

Jones, who noted the importance of imaginative marketing approaches for "growing" the Company's businesses.

AMMS—a Corporate Consulting Services course for both marketing *and* nonmarketing employees—explores various skills required to evaluate marketing-decision tradeoffs.

Explains Alan B. Van Wert, program manager—Marketing Education and Training: "AMMS classes are divided into study teams, taught by eminent faculty members from U.S. graduate schools of business. GE executives and staff specialists meet with attendees throughout the seminar."



Photo by John Long for Medical World News

Doctor of the deep? When internist Dr. Samuel B. Rentsch, Jr., isn't looking down patients' throats, he's looking beneath the surface of the Connecticut River from a homemade two-man submarine that features a 270-degree-visibility bubble made of GE Lexan® resin. The bright orange, six-ton submarine is 21 feet long, 5½ feet wide and 6 feet high, and is towed under

water by a surface vessel. With an umbilical cord from the towing ship, the sub has air, telephone communications and power for lights and cameras.

Observes the Glastonbury, Conn., physician: "In the Navy, I served three years as a submarine medical-diving officer and also developed submarine escape suits and scuba-diving suits. The sub project took me 15 years to finish."

'A chimney sweep's happy as happy . . .' As a Harvard Business School student, Richard G. Osburn put his studies to work to help finance his education. Before joining Bridgeport's Corporate Consulting Services in July as a consultant, he headed Boston's Master Chimney Sweeps, Inc., a group of individuals who scurry across suburban rooftops, making a clean sweep in a dirty business.

Osburn caught the flue bug after noticing that high oil



prices were prompting many New Englanders to return to fireplace heating. Decked out,

Mary-Poppins-style, in traditional top hat and tails, he captured the eye of *People* magazine, which featured him in its Jan. 16, 1978 issue. "It's been said that sweeps are a mysterious, superstitious, romantic lot," Osburn notes. "Supposedly, it's bad luck for a sweep to go up on a roof without his top hat and tailcoat, and it's good luck to shake hands with a sweep. There is also a unique fringe benefit—it's especially good luck for a bride to be kissed by a sweep."

Now, it's Elston Hall. Since it opened in 1969, Schenectady County Community College (SCCC) had been confined to a single building, the former Van Curler Hotel. On Aug. 26, dedication of a \$5.8-million expansion project made SCCC a campus. But the original building remains—with a new name in honor of Schenectady GE's Charles W. Elston, manager—Turbine Technology Assessment Operation.

A member of the college's first Board of Trustees, Elston has served as its chairman since 1970. He helped choose the old hotel as SCCC's initial base of operations, and his association with the building is permanently recognized on a plaque bearing his name. At the dedication ceremonies, Elston (left) received congratulations from SCCC Board of Trustees vice chairman, Donald F. Putnam.



Honors. The World Institute of Black Communications, Inc., has presented an award trophy to GE for public service messages featuring Roberta Flack in support of PIMEG—the Program to Increase Minority Engineering Graduates. Fairfield's E. James Clark (left) and Crotonville's A. Nick Komanecky coordinated the campaign.

- University of Minnesota's John Moore Bryson received GE's 1978 strategic planning research award, presented by



Fairfield's Michael G. Allen, VP—Corporate Strategy, and the Academy of Management.

Holiday classic returns. "Amahl and the Night Visitors," the famous Christmas opera written and composed by Gian Carlo Menotti, will be the feature GE Theater presentation Dec. 24, from 7-8 p.m. (ET) on NBC-TV. The production is completely new, yet—under Menotti's musical direction—scrupulously correct in all details of the original version that premiered in 1951 and was withdrawn as an annual TV event 12 years ago at the composer's request.

Chimes ring again. The NBC-TV chimes, retired two-and-one-half years ago after almost 50 years of introducing network

shows, have been brought back. The chimes' notes . . . G, E and C . . . stand for the General Electric Company, which was

a part-owner of NBC, along with RCA and Westinghouse, when the network was founded in 1926.

New push for the electric car



More efficient components from GE edge the electrics toward being competitive.

Will General Electric's second century be the time when the electric automobile finally comes into its own? A number of GE people are working toward that end.

Success has already been a long time coming. Thomas Edison built the first battery-powered vehicle in 1889. In 1913, Edison and Henry Ford set to work on an inexpensive, lightweight car to be powered by Edison batteries—in effect, an *electric* Model T. By June 1914, two working

models were built, but problems resulting in low speeds, limited range, high cost and great weight caused the project to be shelved.

But the potentialities for a new wave of development are promising, as General Electric's Research and Development Center demonstrated recently in New York City when it rolled out a subcompact auto which will test the performance of *today's* electric car technology. Called the Centennial Electric in honor of the Company's birthday, GE's four-passenger test vehicle was designed "from the ground up" to achieve top performance from off-the-shelf commercial components and batteries.

What does GE see as its role in electric autos? Essentially the same role as in the aircraft industry—as a components supplier. "It is not the in-

tention of the General Electric Company to get into the auto business,” Vice Chairman Jack S. Parker told share owners at the Company’s 1978 Information Meeting in October. However, he said, “we are vitally interested in providing the controls and the motors and the battery technology that will make the electric auto possible.”

Adds Dr. Roland W. Schmitt, VP—Corporate Research and Development: “A primary reason for building the Centennial Electric was to establish just how close today’s components and batteries can take us toward competing with conventional vehicles.”

The GE Centennial Electric draws on a wealth of past GE experience in supplying components for electric lift trucks, golf carts and such earlier GE electric test cars as the “Delta” version in 1967 and the “Q-T Van” (for quiet truck) in 1970-72. The Centennial Electric’s electric drive motor, solid-state controls, plastic windows, headlamps, fan and blower motors, cable and control wires, instruments, switches and other components are all GE—supplied by more than a dozen GE product departments. Triad Services, Inc., an electric automobile design firm in Dearborn, Mich., designed and built the sleek, low-slung test car to GE specifications based on “an integrated concept that keys all elements to the GE propulsion system.”

The car is powered by 18 six-volt, lead-acid batteries made for GE’s Electric Vehicle Sys-

tems Operation in Salem, Va., by Globe-Union Inc., Milwaukee, Wis. They are derived from the deep-discharge batteries now used to power golf carts and recreational vehicles, and can be recharged in six-to-eight hours by plugging them into a 220-volt electrical outlet. The car weighs 3250 pounds.

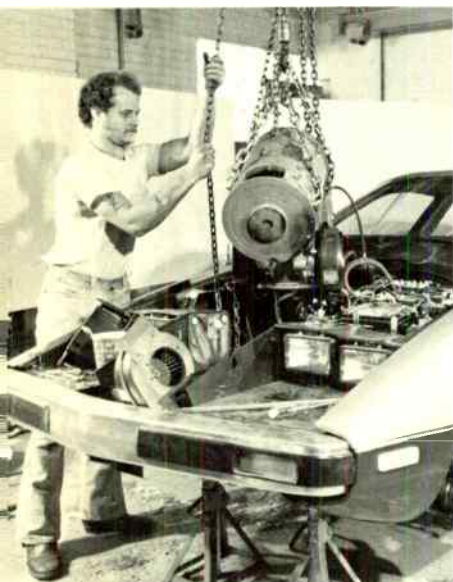
Initial tests show that the front-wheel-drive vehicle has a range of 75 miles at a constant 40 mph, a cruising speed of 55 mph, and a passing speed of up to 60 mph. It can accelerate from 0-30 mph in nine seconds—compared to about six seconds for a conventional car of similar size and weight.

The Centennial Electric is not for sale, and as Vice Chairman Parker indicated at the 1978 Information Meeting: “This as yet is an uneconomic product.”

The first market inroads for electrics, General Electric experts predict, will be with special-purpose vehicles and family second cars, where a large market already exists. For stop-and-go urban driving, the Centennial Electric has an in-town range of 45 miles between battery charges.

If an economical product *could* be introduced, the market for electrics certainly exists. About 11 million of the 111 million vehicles now on the nation’s highways are delivery trucks and second cars used primarily for just this type of short-trip driving.

(continued next page)



For stop-and-go urban driving, the Centennial Electric vehicle is equipped with a GE 24-horsepower d-c traction motor (left) and 18 six-volt, lead-acid batteries (right). Dials on instrument panel (above) measure electric current in amperes, show whether the power is on, and tell the amount of energy stored in the battery.



Remarks the R&D Center's Dr. James M. Lafferty, manager—Power Electronics Laboratory: "It would be nice if there were batteries that could take an electric 300 miles between charges—and someday there may be. But even without these superbatteries there's a potential market for electrics, based on the 10% of vehicles now on U.S. highways that are used for local trips of short distances."

One practical application for electrics is the U.S. Postal Service Jeep. "Most postal delivery vehicles, about 40,000 of them, travel less than 17 miles per day," notes Salem's John R. Tucker, manager—Electric Vehicle Systems Operation. "Field evaluation of 350 electric Jeeps has shown economic benefits, and the Post Office is now in the process of procuring 750 more electric vehicles."

Among other possible uses: light commercial delivery vans, utility meter-reading vehicles and "GE Customer Care Everywhere" type vehicles. "The school bus also appears to be a candidate for the electric," notes Tucker. "These buses run one hour in the morning and one hour in the afternoon, and have both days and nights available for re-charging. There are 300,000 school buses in the U.S. that travel an average 21 miles per day."

Dr. Lafferty states that "the U.S. Department of Energy estimates some 30,000-to-50,000 electric vehicles may be produced annually within the next ten years." Adds Tucker: "In the next decade, GE definitely sees a significant growth in the defined-mission electric vehicle. We expect this market to grow to 28,000 units annually by 1988. If electrics become practical for personal use during this period, *watch out!*"

Compelling reasons can be cited for why the number of urban-based electrics should increase

to at least one-third of all such vehicles by the year 2000. Explains Schenectady's Vernon A. Rydbeck, manager—Electric Utility Market Development Operation:

- World petroleum resources are forecast to be insufficient to supply America's long-term energy demand, even at 50% higher prices. Last year, transportation consumed more than 100 billion gallons of gasoline.

America is almost 100% dependent on petroleum for its transportation requirements.

- The electrics offer distinct environmental advantages, since they do not contribute to air pollution.
- A typical utility load "profile" shows that most utilities have an excess of electrical capability at night—when the electric would normally be charged.

Economic incentives will ultimately indicate the "go" or "no go" future of electrics. For its part, the Federal Government wants to "switch on" this new transportation technology. Public law 94-413 has been passed, providing \$160 million in Government funding for the electric-vehicle industry in the next several years. The Administration feels that electric vehicles offer the most promising transportation alternative, since utilities can use a variety of fuels as the vehicles' energy source.

"GE hopes eventually to demonstrate that a well-designed, 'off-the-shelf' electric can perform reliably, is easy to drive, and—most impor-

tantly—can be economically attractive to consumers," concludes VP Roland Schmitt. "We see ourselves as planting one of the many seeds required to create a sizable electric-vehicle market. By reinforcing GE's position as the world's leading supplier of motors and controls for all existing types of electric vehicles, we can stay at the forefront of this technology." **▲**



Design improvements in the Centennial Electric include front doors that can be opened fully, even when the car is parked within 14 inches of an obstacle.



Beyond the Centennial Electric, GE is in the final stage of developing and building two advanced electric vehicles for the Department of Energy (above). These vehicles are based on a design developed jointly by GE and Chrysler Corporation, and will be powered by advanced lead-acid batteries developed for GE by Globe-Union.

Also, NASA's Jet Propulsion Laboratory has selected GE as one of four firms that soon will begin preliminary design work on a "hybrid" vehicle that can operate on electricity and either gas or diesel fuel. Under a separate agreement, Tokyo's Daihatsu Motor Company is working with GE as a consultant on hybrid vehicles.

Now: computer- aided small NC tools

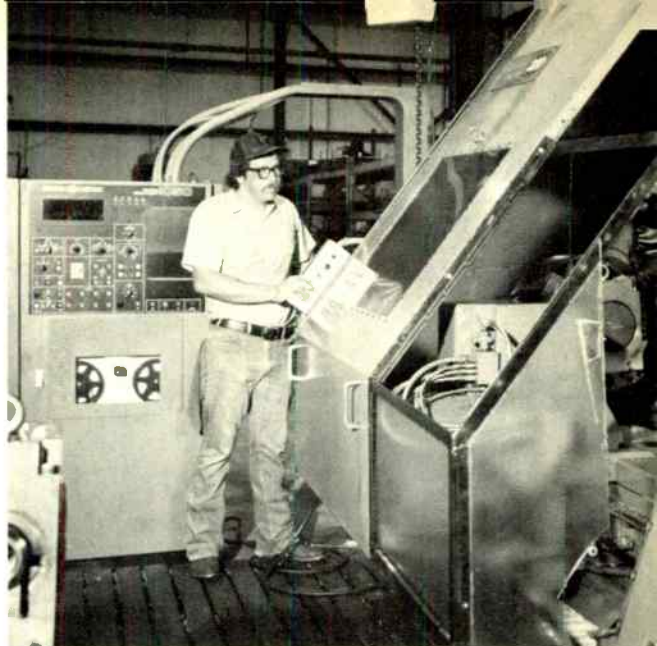
Not so many years ago the big news in increasing industrial productivity was a device that automatically guided machine tools through whole sequences of operations. The device was called "numerical control" and used punched tapes to tell the machine what to do next. GE was among the leaders in developing NC equipment.

Now a new era is underway. It's computer-aided numerical control, and computerized numerical control (CNC) machine tools are sweeping the metal-cutting industry.

And again GE is in the technological forefront. As revealed recently at the sprawling International Machine Tool Show in Chicago, General Electric is offering a complete, innovative line of CNC equipment.

The big thing about the GE product line is that it takes a technology that was first used only in complex, multi-axis machining systems and applies it to simpler, less expensive tools such as lathes, drills and milling machines that do the bulk of U.S. metalworking. "The favorable cost trend of microprocessors and other electronic components permits greater sophistication to be placed economically into today's controls," reports Industrial Control Department's Robert W. Breihan, manager—NC Sales and Service. "The result is that acceptance of CNC even in small jobs has blossomed in the last couple of years."


The advantage of CNC over conventional equipment, in Breihan's view, is that "the microprocessor's power is being harnessed to add features that reduce the time needed to set up a tool for a specific job. Also, with conventional NC equipment, a supplier must build different hard-wired controls for each type of machine, and the OEMs [original equipment manufacturers] must add unique interface hardware for each special machine. With CNC, though, the supplier can build one or two basic controls which, through software changes, can be programmed to suit a broad range of machines."



Using computerized GE numerical control equipment, a Vetco Valve Company operator in Houston produces oil-well-drilling components.

The 'flopper' point from conventional NC equipment to CNC came in mid-1977 for General Electric sales. Today, about 75% of GE's NC business is microprocessor-based. Notes Breihan: "We introduced General Electric's Mark Century® 1050 series of CNC equipment in 1974, and have periodically simplified it to serve broader industrial uses. We elected to 'leap-frog' minicomputers and stake our future on microprocessor technology—and since then have seen our decision vindicated by the increase in versatility and favorable cost trends of microprocessors."

At the Chicago tool show, GE unveiled a new CNC system, the 1050H series, to fill the growing demand for simple controls. "It's the smallest and most value-packed control that GE has ever produced," remarks Breihan. "Moreover, the 1050HL control is so small that we can place this 'box of brains' anywhere. The operator's panel can be machine- or pendant-mounted, and the machine tool and control become essentially one unit."

Nor is GE overlooking the market for all those earlier NC devices. This year GE began selling a program storage-and-edit system which enables the Company to retrofit its Mark Century 550 and 7500 series of numerical control units with CNC features. Called the μ -STOR® (pronounced "micro-store") memory module, the auxiliary system brings CNC capability to conventional NC equipment—thus enhancing productivity and extending machine life. 



Joan Kuebler: all a matter of degree

"I've wanted a college degree all my life!" exclaims Tiffin, Ohio's Joan H. Kuebler, 67, a 1978 *cum laude* graduate of Heidelberg College. "It's finally happened!" A GE secretary for 28 years—27 of them as secretary to four different Hermetic Motor Department plant managers in Tiffin—Kuebler retired in 1975. She then resumed work on her bachelor's degree, earning a double major in history and English.

Kuebler maintained a 3.79 grade average through school, narrowly missing *magna cum laude* which requires a 3.80 average. She won the school's History Prize her senior year, and never made below a B in any class. "I literally studied night and day—no traveling, TV or social life."

What plans does she have for her sheepskin? "I earned my B.A. on the 50th anniversary of my graduation from Tiffin's Caivert High School, so the local newspaper wrote me up. Soon after the story appeared, the high school principal asked if I'd become a substitute teacher, which I'm now considering." How was college life with younger students? "The kids were terrific. When I received my diploma, they kept up the applause all the way from my chair to the stage and back!"



Ira Terry: a patriarch of the Mormon church

In charge of the Company research team that invented the first GE electric toothbrush, Escondido, Calif.'s Ira A. Terry retired from GE in 1967, and now is the top spiritual leader—the patriarch—of the "Escondido Stake" of The Church of Jesus Christ of Latter-day Saints—the Mormons. In this capacity, he is one of the Mormon church's principal leaders.

"I was patriarch of the Boston Stake from 1962 to 1969," states Terry, "at which time the church asked me to relocate to Sacramento, Calif., as president of the new Mormon California North Mission. My wife and I moved to Escondido in 1972."

Among his recent church projects? "The church owns 140 acres of land on Palomar Mountain southeast of Los Angeles, which is used for Scouting and other recreational activities. We're keeping this land as primitive as possible—but to use it, we've had to build a fireroad, drill a well, and construct a pumphouse and storage tanks, an amphitheater and restrooms." Terry—one-time head of Housewares and Audio Business Division's former dental health research section in Ashland, Mass.—adds: "With so many Mexican-American people in this area, I'm now studying Spanish."



Raymond Willey practices ancient art of dowsing

Time magazine on Oct. 9 featured a man who was tightly grasping a dowser's divining rod [a forked fruit tree branch or metal or plastic rod] used in the mysterious art of "dowsing." The man: Schenectady's Raymond C. Willey, who retired from GE in 1957 as a planning and wage rate specialist in the Foundry Department. Willey was quoted as saying: "Dowsing for water is only the bottom rung of the ladder. Now these powers are used for everything from determining what foods to eat to finding lost objects and people."

Is dowsing making a U.S. comeback? "Absolutely," maintains Willey, now secretary of the American Society of Dowers Inc., editor of the society's quarterly publication, *The American Douser*, and author of a book, *Modern Dowsing*. "Some scientists may deny dowers' psychic powers, but for whatever reason, dowsing works. Some 25,000 Americans are practitioners of the art."

Asked what happens when rods detect water, he says they pull downward hard. "A professional can find water 90-95% of the time, and can determine its depth and the number of gallons flowing per minute." He adds: "One in ten persons has dowsing ability."

New Departures



Les Barry: printer's ink in his blood

As Western editor for *Transmission and Distribution* and *Electrical Consultant* magazines, pensioner Lester S. Barry of Menlo Park, Calif., is read by some 60,000 subscribers monthly. "A stroke of luck launched me in my new career," notes Barry, a former Apparatus Distribution Sales Division district manager. "Another GE retiree, H. M. 'Jolly' Jalonack of GE-Pittsfield, was *T&D's* editor-in-chief at the time [he now is a senior editor], and one day out of the blue he offered me the job. I told him I'd never been a journalist!"

Persuaded to "try the job for a year," Barry has been an editor since March 1973. He covers West Coast trade association meetings and encourages electric utility and consulting engineers to write about their technical innovations. "My job is a far cry from my GE work as an electric utilities sales manager in Hawaii. But sales and reporting both require contact work, and I'm benefiting from my utility associations."

Besides his editorial duties, Barry is currently president of the local chapter of Sons in Retirement, a California senior citizens' group. In October, he and his wife, Lorraine, returned from their second trip to Europe in two years.



Hugh Witham: apprenticed to his artistic Muse

An electrical engineer by training, Vermont pensioner H. E. "Hugh" Witham has always had a "scientific bent." That's why now, as an aspiring cabinetmaker, he declares that "I'm apprenticed to my artistic Muse."

Formerly a program administrator with Burlington, Vt.'s Armament Systems Department, Witham retired last year from GE and is learning to faithfully restore such antique furniture styles as Hepplewhite, Sheraton, Queen Anne, Windsor, Chippendale and 18th-Century American. "The skill in furniture restoration lies in assessing the wood-rupture points, removing a minimum of old wood, and matching wood grains and coloring so perfectly that corrections blend with the original."

Witham emphasizes that "you've got to move into a new profession while you've still got the energy and enthusiasm. The GE Pension Plan has allowed me the latitude to train in a wholly new field." His favorite method of finishing wood? "I prefer a conventional finish to a 'spray-on' finish, as the latter doesn't preserve wood as well. My biggest surprise in this business was learning I'd have to apply up to 15 coats to an item of furniture to get the right texture and durability!"



Ex-VP David Cochran: 'business needs a voice on campus'

"Over one-half the engineers who find their careers unstimulating are unhappy for nonengineering reasons." The speaker: former GE VP David Cochran, now a retiree and part-time consultant for Technical Systems and Materials Sector—as well as a frequent college lecturer. "In my talks on campus, I discuss various problems that confront engineers on the job. I tell students not to be a 'loner' on the job; get your boss involved in what you're doing. Study the underlying reasons behind decisions by management and government."

Cochran, from Bethesda, Md., began his lecture series after retiring from GE in 1976. He presently is touring ten schools, and often dines at fraternity houses and sieeps in dormitories. "The business voice needs to be heard on campus. I'm attempting to help bridge the gap between theory and reality—to cushion the shock—and indicate opportunities for career satisfaction."

In 1973, Cochran received an honorary Doctor of Engineering degree from his alma mater, Montana State College. While with GE, he returned to his school frequently as a participant in the GE Executive College Relations Contact Program.

(continued next page)

With the help of GE benefits and Social Security, GE retirees are finding the opportunity to change direction in their lives.



Blanche Mihan: helping others get ready for retirement

"Some people have no idea how to prepare for retirement, psychologically or economically," says former Willoughby Lamp plant secretary Blanche L. Mihan. Mihan has some suggestions for them, which she shares through her work with the National Association of Mature People (NAMP), a nonprofit organization of volunteers who help retired persons adjust.

"General Electric has a good pension plan and gives preretirement guidance through seminars and counseling," notes Mihan. "But many people don't have these advantages."

To offset this, Mihan, NAMP's national corresponding secretary, and her husband Bob (left), a state coordinator, have been working with NAMP for the past two years, and last year organized a local chapter which now has over 100 members. After attending GE's preretirement seminars at Nela Park, the Mihans incorporated GE ideas into programs for NAMP members, and spent their vacation this year meeting with educators around the country to get further ideas for activities. Notes Blanche: "Many retired people today are widowed or single—and lonely. NAMP makes them feel like members of a family."



Ex-VP Charlie Miller heads camp for handicapped

"It's a no-income career that pays big rewards in very special ways." So says Charles J. Miller of his main post-retirement activity: serving as president of the Wonderland Camp Foundation on Lake of the Ozarks in Rocky Mount, Mo. Wonderland provides residential camping experiences for mentally and physically handicapped children.

Miller, who retired from GE in Cleveland in 1969 as VP—East Central Regional Relations, began the project in 1970. He and his wife, Alice, donated part of the land to build the 35-acre campsite, and have a summer house there.

"Alice and I have two adult sons. One is a YMCA executive on Long Island. The other is mentally retarded and lives at a learning workshop near our home in Columbia, Mo.," says Miller. "We know what a retreat like Wonderland can mean for the handicapped. Temporarily, at least, some very special kids forget about hospitals and wheelchairs to enjoy nature walks, swimming and other activities."

Since its first season in 1972, Wonderland has welcomed more than 4750 campers and staff personnel. "For me," concludes the GE retiree, "it's been a dream-come-true."



Berl Raborn: 'Mr. Media' in Nacogdoches, Tex.

In 1958—before retiring from GE in 1965 as Major Appliance Business Group's dealer sales manager in Houston—Berl M. Raborn (center) bought his first radio station in Nacogdoches, Tex. Country-and-Western KSFA-AM was his *first*—because he now owns rock-oriented KTBC-FM as well. What's more, his business, Texan Broadcasting Company, also has filed an FCC application for a UHF television license, which he hopes to receive this fall.

"My son-in-law and business partner, Bob Dunn (left), got me interested in radio. Since selling radio ads for appliances is akin to selling the appliances themselves, I don't feel I started from scratch in business." Raborn observes that he's a member of one of Major Appliance's notable families—"three of my brothers were sales representatives, in New Orleans, Kansas City and San Antonio"—and he adds that another brother, Vice Admiral W. F. "Red" Raborn, Jr., was CIA chief under President Johnson.

At age 78, Berl Raborn insists that "I'm having too much fun to retire. I counsel students at Stephen F. Austin University two afternoons a week as a member of the Small Business Institute's Active Corps of Executives."

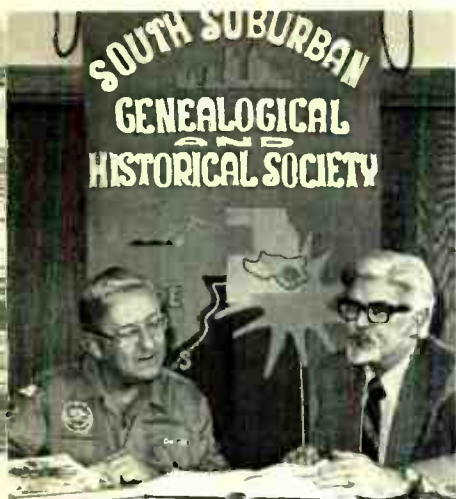


Robert Keefer works for Tar Heels' athletic department

Always a sports enthusiast, Chapel Hill, N.C.'s Robert G. Keefer (right) was the Cleveland Indians' public-address announcer for seven years, until 1975. He served in the same capacity for the Cleveland Cavaliers for six years,

until this year, and for 28 years, officiated at Ohio high school and college football and basketball games.

Keefer, who retired in February as Nela Park's employee activities supervisor, has now moved south to a warmer climate and taken up new duties as a cafeteria hall "checker" at the University of



Bill Marquardsen invented new Boy Scout merit badge

Before 1973, there was no Boy Scout merit badge in genealogy. GE retiree William G. Marquardsen thought there should be, and persisted until the Scouts' national headquarters adopted the idea. Since then, 25,573 of these special insignia have been awarded. Above, at the genealogical library he helped create in South Holland, Ill., Marquardsen (right) met recently with Joseph Walburn, a Scout district executive.

"As a quality auditor for GE, I always was fussy about accuracy," explains the 1967 pensioner, who left Chicago Heights' former Commercial Equipment Department on disability retirement. "And today, I'm fussier than ever—only now it's in tracing the details of people's ancestries. It's very easy to start climbing somebody else's family tree if you don't check your facts carefully."

Marquardsen is founder and president of the South Suburban Genealogical Society in South Holland, a genealogy magazine columnist and a frequent guest speaker on his favorite subject at civic club meetings. His own roots? "A little sauerkraut [Marquard] with a Dane [sen] attached. I come from a line of jacks-of-all-trades and wild Vikings near the German/Danish border."

North Carolina. Does this mean goodbye to athletic endeavors? "Certainly not!" asserts Keefer. "Besides my seven-day-a-week job as a 'head counter' at the athletes' training table in the dining hall, I'm involved in some way with 21 Tar Heel sports. Next spring, I'll be announcing men's baseball and women's basketball games." **AN**

Organization Changes

CORPORATE

Jerome T. Coe, Staff Executive—Environmental Quality and Safety

CONSUMER PRODUCTS AND SERVICES SECTOR

John C. Truscott, Staff Executive—Consumer Products and Services Technology Operation

Gary D. Jones, General Manager—Home Laundry Engineering Department

INDUSTRIAL PRODUCTS AND COMPONENTS SECTOR

Jack C. Acton, Staff Executive—Industrial Products and Components Technology Operation

Walter S. Bertaux, General Manager—Locomotive Engineering Department

John J. Reynolds, General Manager—Locomotive Manufacturing Department

INTERNATIONAL SECTOR

Gerald F. Gould, President and General Manager—General Electric Japan, Ltd.

POWER SYSTEMS SECTOR

Arthur E. Peltosalo, VP—Special Projects

William R. Tackaberry, VP—Power Systems Customer and Industry Relations

Thomas H. Lee, Staff Executive—Power Systems Technology Operation

Charles E. Bedford, General Manager—Switchgear Business Department

Edward W. Springer, General Manager—Electric Utility Sales Division

TECHNICAL SYSTEMS AND MATERIALS SECTOR

James N. Krebs elected a Vice President

Jerome J. Suran, Staff Executive—Technical Systems and Materials Technology Operation

George Troutman, Program General Manager—Washington Area Programs Operation

THE BUSINESSES

Food: GE's two approaches

A homemaker buys fresh, vine-ripened tomatoes at a grocery store in Manlius, N.Y. A food service officer puts just-picked salad vegetables on the daily menu of U.S. Navy personnel at a base in Argentia, Newfoundland. What do the two have in common? Food by General Electric.

A chef creates gourmet banquets aboard the stately *Queen Mary* at Long Beach, Calif. A high-school sophomore prepares French fries on Saturday afternoons at a Wendy's "hot-n-juicy hamburgers" quick-service restaurant in Chicago, Ill. How do their jobs parallel? Kitchen equipment by GE.

As shown here, GE has a double entry in the food business: the bumper-crop-producing systems technology of Syracuse's Controlled Environment Agriculture Operation (CEAO) and custom-designed commercial kitchen appliances from Chicago Heights' Food Service Equipment Business Department (FSEBD).

GE's innovative system of programmed-environment agriculture is called Geniponics[®], a technology in which light, atmosphere, nutrients and growing medium are scientifically controlled to produce continuous high yields of premium-quality crops. The first Geniponics "garden" was sown in a research and development module in 1973. Today, the



Juicy, ripe-red Geniponics[®] tomatoes are in increasing demand at the P&C Food Market in Manlius, N.Y. (above), and Sterio's Landmark Restaurant in Syracuse (below). Five supermarkets and ten fashionable restaurants in the area are participating in a GE test market program in which Geniponics tomatoes are delivered to them fresh all year.





Aboard the luxurious *Queen Mary*, permanently berthed at Long Beach, Calif., diners (above) enjoy fine foods prepared on Chicago Heights-GE equipment (right). The ship's kitchen serves three restaurants and a coffee shop.



system has expanded to a converted Syracuse GE machine shop—and is growing in international directions.

Observes CEAO manager Lewis W. Fogg: "Geniponics is particularly well suited to regions considered 'hostile

environments' for traditional farming. Because crops are nurtured inside special modules free of damaging extremes in moisture and temperature, it's *always* a good growing season."

Case in point: Argentina, Newfoundland, is a rocky

coastal town with limited areas of fertile soil and a bitterly cold climate much of the year. Tomatoes, lettuce and cucumbers grown and harvested on site in a Geniponics facility make up 400 daily salads for about 200 U.S. Navy men and
(continued next page)



Quick-service restaurants such as Long John Silver's (left) and Wendy's (above) feature deep-fry menu items. GE food service equipment assures taste consistency and dependable, high-volume performance.

women stationed there.

While this and other projects began this year, others are expressing interest in Geniponics. Among them are the 1980 Winter Olympics Food Services Committee, to feed athletes at Lake Placid, N.Y.; and pipeline companies, to carry the facilities along construction routes in such areas as Saudi Arabia and Abu Dhabi. And since an adaptation of the GE technology could meet the closed ecological systems requirements of space habitat, the sky's the limit for Geniponics applications.

Product test marketing, for now, centers on the humble tomato. A. John W. Buckle, CEO marketing manager, explains why: "It's this country's third-largest-selling vegetable [behind potatoes and lettuce], yet no premium-grade tomato ever has been available year-round. Also, there has been essentially no brand recognition of tomatoes in supermarkets. The GE label is doing for the tomato what Chiquita did for the banana."

Geniponics tomatoes are tastier, better looking and considerably higher in Vitamin C content than tomatoes grown in hothouses or mechanically harvested and shipped long

distances to Syracuse-area markets. Reason: only ripe-red tomatoes are hand-picked in a Geniponics facility, and delivered the same day to ten restaurants and five supermarkets participating in a Central New York test program. The premium-quality tomatoes command a premium price—but their popularity continues to rise.

In kitchens and galleys of notable and familiar eating locales, GE's other food business connection thrives. On the diverse list of facilities equipped with Food Service Equipment Business Department's heavy-duty electric cooking and warming products: the Senate cafeteria at the Capitol; Joint Chiefs of Staff cafeteria at the Pentagon; Camp David; Soviet Embassy; Blair House; National Gallery of Art; U.S. aircraft carriers, frigates and nuclear submarines; Busch Gardens; the *Queen Mary*; schools; hospitals; offshore-oil-drilling rigs; and quick-service restaurants including Wendy's, Long John Silver's, Sambo's and McDonald's.

Says FSEBD general manager Peter E. Fuerst: "Our business grew up in the marine and institutional food markets. GE

galley equipment, for example, was aboard virtually every U.S. battleship afloat during and after World War I. But in 1974 we focused on a new arena of the food business—quick-service restaurants. Today, 'fast-food' preparation equipment is nearly 40% of our total sales volume."

Success of quick-service restaurants has been nothing short of phenomenal. The business last year grew 16%, compared to the industry-wide restaurant growth average of 8%. Americans spend nearly one-third of their food dollars on meals eaten away from home. And over a six-month period, 93% over age 12 patronize "fast-food" eateries at least once.

FSEBD's biggest seller in this market? Commercial fryers. Notes marketing manager Wayne W. Scoville: "Along with quick, high-volume capabilities, these restaurants depend on the taste consistency of their foods. Wendy's French fries, for example, have to taste as good in Connecticut as they do in California. Hundreds of GE computer-controlled solid-state fryers in use assure this customer of achieving that goal."

The quick-service trend continues. The *U.S.S. Saratoga*, catering to a young, volunteer Navy with "fast-food" palates, opened a forward galley to beef up its usual "three squares" chow. With FSEBD products now turning out hamburgers, fried chicken, French fries and pizza, attendance at lunch and dinner has jumped 27%! And in the ShoreLine School District of Seattle, dietitians advised: "Give the kids what they want—burgers and fries." GE Chicago Heights' equipment is helping satisfy the hungry demand. **AN**



Geniponics® facility (above) can grow vegetables, tree seedlings and ornamentals. Right, Washington, D.C.'s National Gallery of Art uses GE kitchen equipment.





For student safety, Georgia schoolbus driver uses CB to monitor driving conditions and report emergencies.

CB radio's serious side


In Citizens Band radio jargon, much of CB's current usage is nonsense talk by "alligators"—individuals whose verbal abuse of CB radio air time demonstrates the annoying characteristic of "all mouth and no ears." But that image of the CBer is changing. GE is showing the public that CB has a serious side.

A leading example is supplied by two high schools and a special education center for handicapped children in Bartow County, Ga. Working with Syracuse's Audio Electronics Products Department (AEPD) and the Georgia CB Broadcasters Association, the schools have installed CB equipment in their buildings and buses. Primary reason: safety and security of students.

And in public service messages being broadcast today on radio and TV in top U.S. markets, safety and security themes are brought home to consumers by a variety of scenarios where help is needed—and obtained with CB radio. The dramatizations were created by GE's AEPD and Chicago-based REACT (Radio Emergency Associated Citizens Teams) International, Inc., a nonprofit organization of 100,000 volunteer CB radio operators dedicated to 24-hour monitoring of CB's emergency channel (9).

Explains AEPD general manager Walter W. Williams: "The popularity boom of CB in recent years has been well documented, yet CB's real value often is overlooked. The radio provides instant communications that offer a family peace of mind wherever mobile, home 'base station' or portable hand-held units can operate."

The dramatic growth of CB radio—from 560,000 licensees in 1964 to 14 million licensees and 30 million radios in use by October 1978—has been attributed largely to motorists' desire for highway camaraderie and on-the-scene communications. Between 1970 and 1978, installations of CB radios jumped from one in 60 passenger vehicles to better than one in ten!

Observes REACT managing director Gerald H. Reese: "On June 16, the Department of Transportation, Federal Communications Commission and Interstate Commerce Commission, in a joint policy statement, officially identified Citizens Band radio as the recognized highway communications system for the nation. This act is in accord with GE's interest in extending the serious uses of CB for public service, and REACT is glad to take part in the development of a nationwide CB safety and security awareness program." 

Pre-Columbian spaceports?

Has the earth been visited by aliens from another planet? "Yes," says Cleveland's Robert Van Der Velde, GE News editor for the Cleveland area, and he is writing a book to present his views. "No," says Pleasanton, Calif.'s Alice M. Desrosiers, an optical microscopy technician with the Vallejos Nuclear Center. Both GE employees have made numerous vacation trips to the Mayan temples of Mexico's Yucatan Peninsula and Guatemala where, according to some observers, clues exist which prove outer-space creatures founded the Western Hemisphere's pre-Columbian civilizations. Here are summaries of their viewpoints.

Bob Van Der Velde: Deep in the unexplored jungles of Guatemala, hidden under a mantle of rain forest, lie the ruins of an ancient spaceport larger than New York's Kennedy International Airport. It contains more than 30 miles of paved runways, the largest of them seven miles long and 200 feet wide—big enough to accommodate a landing by the U.S. Space Shuttle. You haven't heard about this before because I and the three men I led to the site in 1959 are the only people in modern times to have seen it.

From the architecture of the terminal buildings, it appears that the structures were built by the Mayas around 500 A.D. I believe these huge, overgrown landing strips were once used by spacecraft from another planet. This is not as incredible as it may seem, for there is an enormous amount of evidence

indicating that aliens from outer space visited earth in prehistoric times.

For 35 years, my hobby has been the exploration and study of the ancient civilizations of the Western Hemisphere and, long before Von Daniken's *Chariots of the Gods*, I noticed some strange things in the jungles of Central and South America. One of the sites I visited was Palenque, where the "ancient astronaut" carving on a sarcophagus, made famous by Von Daniken, was discovered. Not far from Palenque is the ancient Guatemalan spaceport.

In 1958, viewing aerial photos of the unexplored Guatemalan jungles taken for an



In 1959, deep in a Guatemalan jungle near the Palenque pyramid, Nela Park's Bob Van Der Velde discovered the ruins of a Mayan city. Nearby are apparent pavements which he believes were spaceports used by aliens.

American petroleum company, I noticed a strange cluster of converging lines, which oil company officials admitted had them baffled. The following year I organized an expedition into the area to solve the puzzle. I managed to talk three men into guiding me to a little-known Mayan ruin called Muralla. Muralla was located directly south of the area in my aerial photo, and I figured once we reached that spot we could hack a trail northward to the place where the mysterious lines appeared.

Five days of the worst jungle travel I've ever experienced were required to reach Muralla. Sometimes the mud was up to the mules' bellies. Thorns ripped our clothes. Clouds of mosquitoes followed us constantly. We were all a mass of cuts, bruises and insect bites when we reached the ruins.

I believe Muralla was the southern terminal of the spaceport. It was certainly the strangest Mayan ruin I ever saw. There were only two buildings, but radiating out from them far into the jungle was a bewildering network of walled patios. Stranger yet was the lack of doorways, making it necessary to climb over the walls to get from one patio to the next. Could these be storage bins used by alien hovercraft to load and unload goods the aliens did not wish the Mayas to see?

The next morning we began hacking our way through thick foliage, traveling by compass. After several hours I noticed we were following a huge wall of dressed stone that connected with Muralla. I clambered atop it and found that the vegeta-



From the air, Peru's Nazca Plain resembles modern airport, with "runways" crisscrossing in every direction.

tion on the other side was less dense, the trees of a smaller girth. This usually indicates an ancient paving, although the pavement itself is usually crumbled away. Crossing the paved area, I found a second stone wall 200 feet away, paralleling the first. The change in vegetation between the walls was what made the areas visible from the air. We had discovered the first of a vast network of enormous, walled runways.

The next day we found another runway, also contained between walls. This one was 400 feet wide. We followed it into the ruins of an ancient city.

It was not a large city—just half a dozen buildings, all with collapsed roofs, making it impossible to enter them. Mayan cities were not cities as we know them, but ceremonial centers with the populace dwelling in huts surrounding them. This center was hidden from public view, however, by high walls, as if some enormous secret had been kept from the outside world. Two of the walls

connected with the 400-foot runway, which would have permitted spacecraft to come and

go in secrecy.

We had discovered the main terminal of perhaps the last and greatest spaceport built by aliens on our planet.

The Nazca Plain in Peru is another place considered by many to be an ancient spaceport. The entire plateau is covered with strange runway shapes and giant pictures, so large they can be seen only from the air.

One of the experts on Nazca is Dr. Javier Cabrera Darquea, and it was primarily to interview this man that my wife, Lois, and I spent our vacation this year in Peru. A respected surgeon and a founder of the University of Ica, Dr. Cabrera has lived all of his life near Nazca. Over the years he has compiled a collection of more than 11,000 engraved stones brought to him by Indians who found them in a location they wish to keep secret.

These stones are among the most astounding archaeological artifacts ever found, and to me they are 'proof positive' that

(continued next page)



Have alien astronauts visited earth? Pre-Inca ceramic suggests a person's face peering out of space helmet, complete with window and portholes.

earth has been visited by extra-terrestrials. Dr. Cabrera believes many of the stone engravings are 50 million years old, for they vividly depict men battling dinosaurs. Other stones contain pictures of highly advanced surgery—some of it more advanced than we are capable of performing today.

One series of engravings gives step-by-step instructions for a heart transplant. One stone shows blood from a pregnant woman being pumped into the organ about to be transplanted. I asked the doctor if this is normal procedure today.

"This could be a page out of a future medical journal," he replied. "Apparently there are certain hormones in the blood of a pregnant woman that prevent rejection. The French are just now beginning to experiment with it on animals."

Turning to another stone, he said, "And look at this—a

brain transplant! We are centuries away from this!"

We know that some highly advanced medicine was practiced by the Incas a thousand years ago. More than 10,000 trepanned skulls (i.e., with portions of the cranium removed) have been found in Inca graves. New bone growth in 80% of the skulls indicates that the patients lived. Hundreds of pottery vessels from the Mochica culture in Peru show people with amputated arms and legs—a feat the rest of the world was unable to perform until the 18th century.

By studying stone engravings and through investigations on the site, Dr. Cabrera is convinced the Nazca Plain is an ancient spaceport. He even explained to me how the space-ships were launched—by sending them hurtling down the Andean foothills under mag-

netic drive and out across the plain, where an enormous electromagnet slingshotted them into the air.

Is Dr. Cabrera right? The other day—months after visiting Peru—I picked up a report from the Massachusetts Institute of Technology. MIT had been requested by the U.S. Government to develop a method for mining minerals on the moon. Their solution was to catapult a space vehicle down one of the lunar mountains under magnetic drive, out across a plain and then sling-shot it magnetically into trajectory. The report said such a launching is practical with existing knowledge, and a working model is now under construction.

MIT and Dr. Cabrera had invented the same launch system—one working with the latest scientific advances, the other with ancient artifacts!



The Desrosiers flank a rain-god mask at Guatemala's Uaxactún—the oldest known Mayan city.

Alice Desrosiers: "If you go looking for clues of an 'outer-space connection' among archaeological finds, you end up interpreting the hieroglyphics in such a way that your theory is supported," declares GE's Alice Desrosiers. With husband Wilfred, who is dean of students at Oakland's Merritt College, she has made six trips to Central America—the first one in 1972.

The Desrosiers have visited all the major Mayan excavations—Tikal, Palenque, Río Bec, Uaxactún and Yaxchilán—as well as

the more famous pyramids of Chichén Itzá and Etzna. "The Mayan priests were competent astronomers and mathematicians," acknowledges Alice. "They pioneered the concept of zero. They tracked the revolutions of the planets, especially Venus."

But she notes: "While they were advanced in these ways, they *never* devised the wheel. *Neither* did they have beasts of burden."

Her thoughts on the origin of Peru's Nazca lines? "In *Scientific American's* October issue, William Isbell writes that these ground drawings 'were primarily a product of social mechanisms for regulating the balance between resources and population.'

"Work-gang labor, as revealed by Egypt's pyramids and China's Great Wall, was not a novel concept for earlier societies. The Nazca drawings could simply be a forerunner of the New Deal's WPA art projects—instituted to keep the population stable during fluctuations in the economy."

She concludes: "I think it's rather presumptuous to insist that the Mayas and Incas were incapable of achieving their own greatness, but required the assistance of alien colonial powers. These Indian cultures of the Americas reveal their own peculiar sets of scientific advances and 'ignorances' which are common to all societies." ■

Slants on Centennial series

Feb. 27, 1978

Having spent a considerable amount of time in Memphis, I would like the *Monogram* to clarify a story that concerns Memphis and Thomas Edison . . . While at the Southwestern Telegraph Company [circa 1866], did Edison invent . . . a way to electrocute roaches by stringing live wires along baseboards?

WILLIAM R. JENKINS III
Greenwich, Conn.

Reply: Edison did invent an electric roach killer. We also found this item in Matthew Josephson's *Edison: A Biography*, page 47:

"As an itinerant telegrapher, Edison often lived in vermin-infested bedrooms. At the Western Union office in Cincinnati, formerly the site of a large restaurant, they were menaced by armies of rats. One of Edison's first essays in invention



of a primitive sort was a contrivance made up of two metal plates insulated from each other and connected with a main battery. This machine he laid out in the cellar, designating it as a 'rat-paralyzer.' When one of the rodents chanced to place its forefeet on one plate and its hindfeet on the other, then, as Milton Adams phrased it, 'it would render up its soul and depart this earthly sphere.'"

June 23, 1978

I was pleased to see on page 23 of the *May/June Monogram* a picture of the GE portable sewing machine made in 1932. Many people I have spoken with did not believe GE made sewing machines. I am still using this model. . . . I inherited it from my mother. I use it frequently, and it still runs well.

DOROTHY TEMPLE
Schenectady, N.Y.

June 16, 1978

Your piece in the *May/June* issue about relations work brings to mind former GE Board Chairman Owen D. Young, the granddaddy of them all. . . . I remember his "goodwill" quote that hung in most GE offices in my time (1928-58). . . . Several times I've attempted to get a copy of that quote, but without success.

JOHN E. ERB
Northville, N.Y.

Reply: Chairman Young's words: "Let us not forget that anyone who will visit us, anyone who will call us on the telephone, anyone who will seek our aid, offers us the privilege of creating goodwill for the General Electric Company. Let us not throw away that privilege. Let us not rebuff the man who gives us this opportunity."

Sept. 28, 1978

I suggest you consider an article about William Stanley. He certainly ranks with other GE giants—Alexanderson, Steinmetz and Thomson. He pioneered a-c distribution of electrical power which gave rise to the transformer industry.

ROBERT C. OSTHOFF
Pittsfield, Mass.

Reply: The *Monogram's* recent Centennial history series

acknowledged Stanley's contributions, but we can elaborate here. In *Men and Volts*, John W. Hammond notes that GE purchased the Stanley Electric Manufacturing Company in Pittsfield in 1903: "The Stanley Company had brought out its inductor alternator, and its transformers had reached a point of great efficiency. General Electric could not offer to its customers complete electrical systems without this progressive concern." (page 284)

Hammond: "Stanley was the first to develop commercially a practical transformer, although not the first to conceive it. He utilized the only efficient principle of design and the only efficient system of circuit connection." (page 106)

Hammond also mentions Stanley's "SKC" system of a-c equipment—the initials for Stanley and business partners Kelly and Chesney: "They were an aggressive triumvirate, and their work greatly accelerated the development of the alternating current." (page 178)

April 16, 1978

May I join those who, whether seeking a favor or not, compliment you on the excellence of your work. . . . As a constant commuter in-and-around Philadelphia, I instantly recognized the photo used on page 19 of the *March/April* issue [an Amtrak train pulled by a GE electric locomotive]. It is a fine example of the coexistence of the old (stone bridge), current keepers of old heritage (racing skulls), and newest version of an old transportation system (passenger train).

ALEXANDER M. NEWMARK
Cherry Hill, N.J.

GENERAL  ELECTRIC

General Electric Company
Fairfield, Connecticut 06431



BEDSIDE EXAM. No longer must emergency and nonambulatory heart patients be transferred to a hospital's nuclear department for cardiology tests. The new General Electric DataCamera[®], a portable nuclear scintillation camera, is the first system of its kind with an onboard computer capable of acquiring and analyzing data at the bedside of the critically ill patient.

Nuclear cardiology tests are very important in coronary care, since they deliver accurate measurements of the heart's function without requiring exploratory incision into the body. This procedure complements "coronary catheterization" as a means of diagnosis—a method that requires inserting a catheter into the heart through an artery.

Shown here, a nuclear medicine technologist at the Milwaukee County Medical Complex prepares a patient for a bedside nuclear-cardiology test.