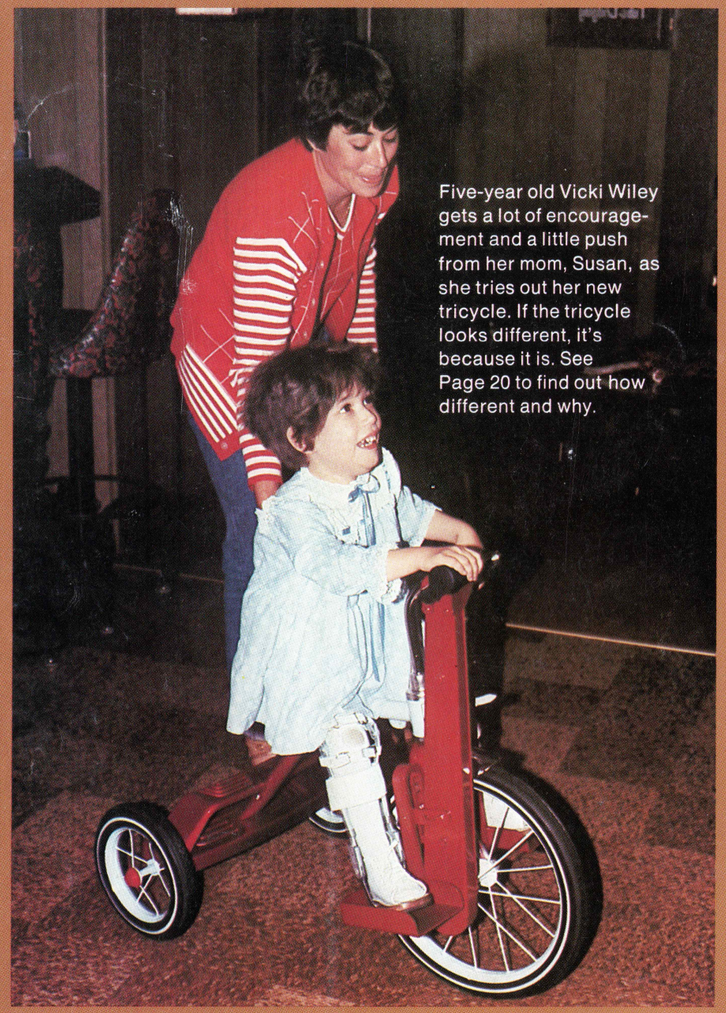

Five-year old Vicki Wiley gets a lot of encouragement and a little push from her mom, Susan, as she tries out her new tricycle. If the tricycle looks different, it's because it is. See Page 20 to find out how different and why.

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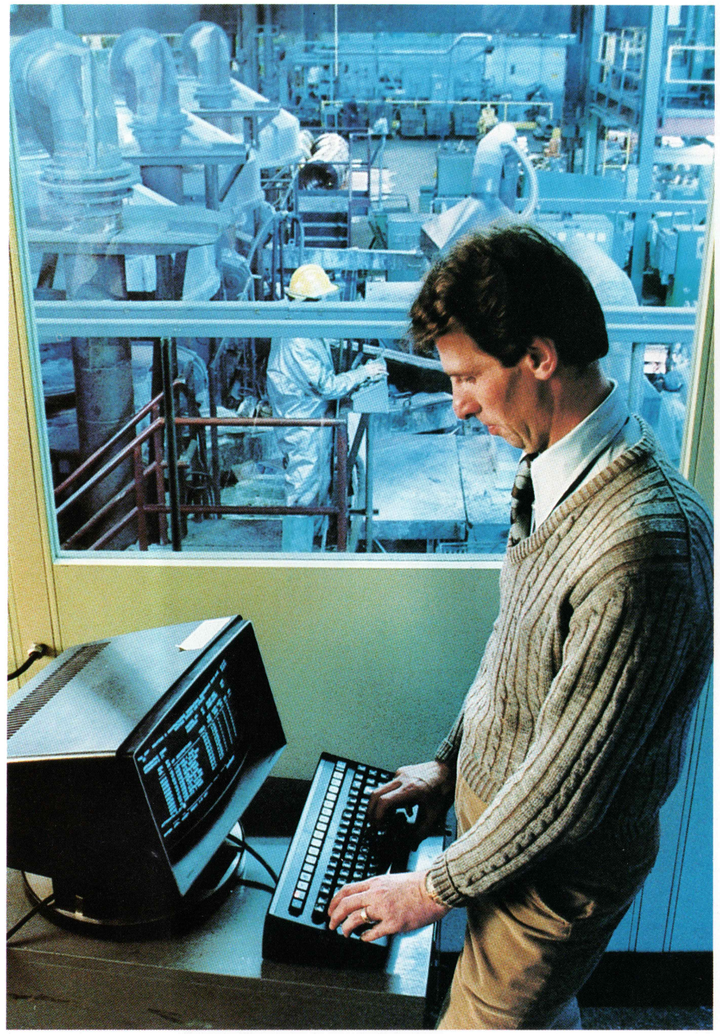
WE

MAY-JUNE 1981

Conserving Energy:

Our multifaceted program

What's New



Using a computer to manage the flow of materials is hardly a world-shaking idea these days. What is unusual is that one of the most advanced computer systems you can find is helping to run a metals mill at 78-year-old Hawthorne. There, furnaces melt a wide variety of metals and roll the strips, rods and coils used to make most Western Electric metal products.

What the new system provides is a virtually up-to-the-minute view of what's happening anywhere in the sprawling metals mill. Dataspeed® 40 terminals around the mill tie in to a data base located at the Warrenville Data Center 15 miles away. New information is fed in all day long —on what is running on the various reduction mills and what new orders have come in. The computer comes back with updated information on stocks, shipments, capacity and backlogs.

According to John Trecka, Material Management Department Chief, the new system determines when and how much to schedule, and it helps the shops maintain their order schedules and get the product to the customers on time.

"It also helps us know our limits," says Trecka. "The computer won't let us schedule more orders than we can handle. And, it tells us when we should increase capacity by enlarging our production areas or going to additional shifts.

"The bottom line is profit. Industry in general is beginning to recognize the value of such a system and schools are now developing curriculums in materials management.

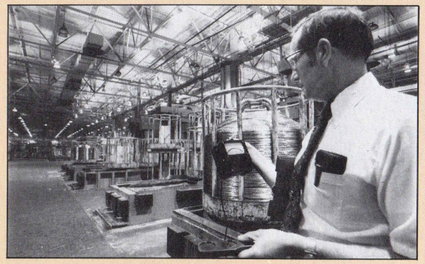
"Here at Hawthorne we believe that materials management can impact very favorably on profit by reducing costs, improving efficiency, reducing inventory, maintaining good customer relations—well, the list is endless." WE

In the Hawthorne Metals Mill, Section Chief Don Nielson, checks production status from an office overlooking the non-ferrous continuous casting line. Dataspeed® 40 provides up-to-the-minute data on the mill's metal stocks, orders and shipments.

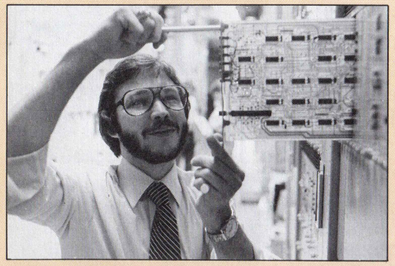
WE Contents

3rd Issue
33rd Year

Page 2

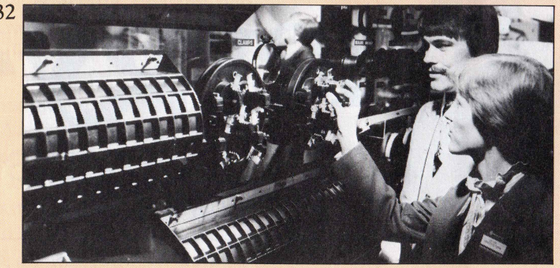


Page 10



Page 16

Page 32



Western Electric

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ON THE COVER: Artist Jack Freas takes an imaginative look at the world of energy. Our cover story begins on page 2.

By Saul Fingerman

Energy- IT'S EVERYBODY'S CONCERN

Reducing energy consumption has become a way of life at Western Electric

Our company expends a great deal of energy in its efforts to conserve energy. This may sound both paradoxical and self-defeating until you realize we are talking about two vastly different kinds of energy: the energy saved is largely electrical and petrochemical; the energy spent to save it is largely mental and creative.

Most of this creativity occurs as part of a well-organized company-wide program being spearheaded by D. A. Heggie, a department chief with an industrial engineering background and a broad southern drawl.

According to Heggie, Western's intensive energy management effort began in 1973 in response to the Arab oil embargo. A Bell System corporate policy was established which basically says that we are dedicated to comprehensive energy conservation, and an organization was created within Corporate Engineering to steer our efforts in this direction. In addition, energy coordinators — mostly senior engineers—were named at all major locations.

Heggie is assisted by a tightly knit group consisting of Senior Engineer John Bullock, Engineering Associate Paul Gallagher and Public Relations Associate Janet Foster. Together, they provide technical and administrative support to field locations via an energy news magazine, posters, decals, brochures, pamphlets and technical magazines—all aimed at creating total energy awareness and employee involvement throughout the company. "Our aim," says Heggie, "is to make everybody in the company as energy conscious as they are safety conscious."

His department coordinates the company's annual forecast of energy consumption by locations and issues monthly status reports. They also analyze the data for trends to assure that Western Electric does its part to help the Bell System meet its goal of "Zero Energy Growth." When a location misses its forecast, it usually has a good reason, like the plant that forecast its fuel consumption on the basis of 20 percent growth in production and then actually experienced well over twice that amount. Heggie also sees to it that any good ideas the high performers have are broadcast to all locations.

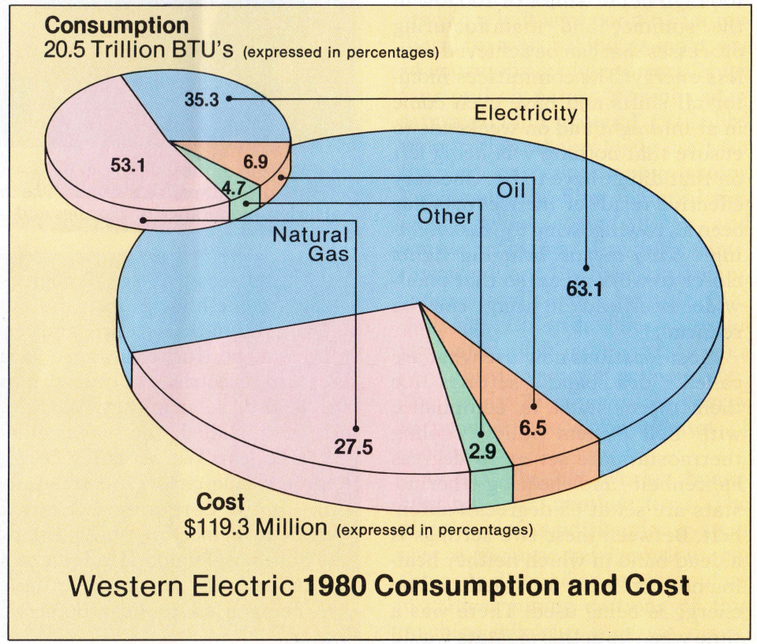
The motivation behind all this is easy to understand. Even though we are not an energy-intensive industry, our size makes us a large consumer. In fact, we account for about 24 percent of the total Bell System energy consumption. This year, we will use over 21-trillion BTUs; 40 percent of them to heat, cool and light our buildings, and 60 percent for manufacture. A BTU, incidentally, stands for British Thermal Unit and is the amount of heat it takes to raise the temperature of one pound of water one degree Fahrenheit. Another way to think of it is that a BTU is equal to a quarter of a calorie. Twenty-one trillion of them are equivalent to about 3.6 million barrels of oil and will cost us about $137 million in 1981. In view of this, energy conservation is not only a moral imperative, it is just plain good business and common sense.

Left—Janet Foster and D. A. Heggie look over early entries in a poster idea contest. Below—Pie charts show where the money goes for energy use at Western Electric. Electricity takes the biggest bite of the pie.

Even more important is the larger, nationwide, picture. Few people doubt that the United States can become more self-sufficient in energy and continue healthy economic growth if it reduces its energy consumption. As Don Procknow said last year, "All Western Electric people have an important stake in America's energy future. Today, each of us has a personal challenge to make the most efficient use of our available energy resources in everything we do—at home and on the job—to help assure a comfortable and productive tomorrow."

Western Electric has responded to this challenge in a big way. Since 1973, we have cut our lighting, cooling and heating energy use by 40 percent. And, even though our production has gone up by 35 percent, we are using 16.5 percent less manufacturing energy. This achievement exceeds the fine record of industry as a whole, which reported a minimal-usage growth between 1973 and 1979 while experiencing a 17 percent increase in output. For Western Electric, the bottom line is that our comprehensive energy conservation program has already saved us over $177 million through 1980. And in February, AT&T announced that the Bell System used less energy in 1980 than in any year since 1973. Despite overall business growth, the Bell System consumed almost 11 percent less energy than it did in 1973 —the year we began our energy management program. Because of this program, the Bell System has avoided some $1.2-billion in energy outlays.

Nor has our performance gone unrecognized. The Bell System won two energy awards in 1980 and



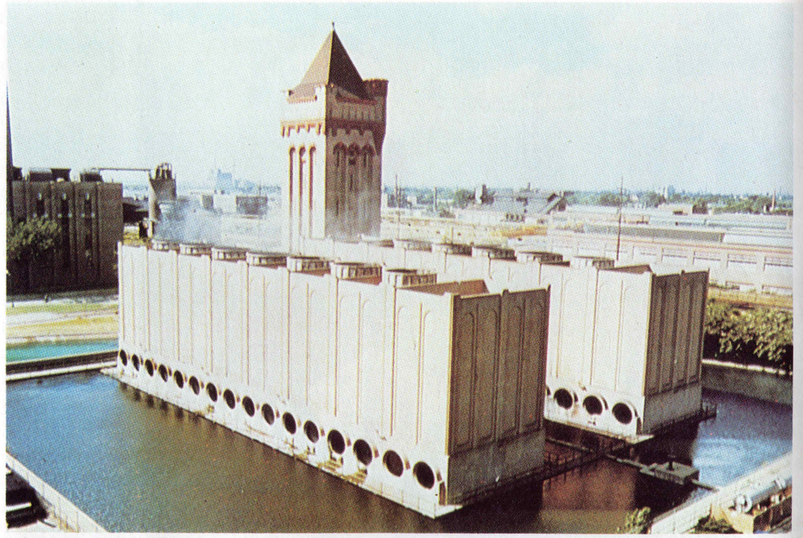
Western Electric **1980 Consumption and Cost**

we won one this year. The first was presented to AT&T Chairman Charles L. Brown by the National Energy Foundation in recognition of the Bell System's energy conservation program conducted among its employees. The second award was presented to AT&T Vice Chairman James E. Olsen by the Alliance To Save Energy. And in January of this year, Don Leonard, Vice President, Corporate Engineering, went to the White House where he represented Western Electric as one of the recipients of the President's Award for Energy Efficiency.

How did we do it? By expending a lot of mental and creative energy and by vigilance and careful attention to detail. What follows is a sampling of the kinds of energy-saving activities, improvements and innovations that are helping us keep a tight rein on energy.

Many of our plants now have formal energy-management committees. Some of these committees go over their locations with a fine-tooth comb, looking for energy waste of any kind—heat leaks, unnecessary lighting, thermostats set too high in the winter or too low in the summer and manufacturing processes that can be achieved with less energy. The committees monitor all shifts and have even come in at midnight and on weekends to ensure that nothing was being left on that didn't have to be. One very effective result of their efforts has been a growing swing to "task lighting." This means bringing lights closer to work areas, so that plant-wide overhead lighting can be reduced.

Most locations now use what are called "dead-band" settings for their thermostats. In compliance with Bell System policy, cooling thermostats are set at 78 degrees Fahrenheit and heating thermostats are set at 65 degrees Fahrenheit. Between these two settings is a dead band in which neither heating nor cooling is provided, and no energy is being used. There was a time when both thermostats would have been set at about 72 degrees so that something was *always* on.



Paul Wergin of the Columbus Works and the W-Y electric car that he and fellow worker Dave Yates built. The unusual car runs on 16 six-volt batteries, has a range of 20 miles and costs about a penny a mile to run.

More dramatic, perhaps, and certainly more future-oriented are Western Electric's ventures into the field of solar energy. We have already installed small solar units at the Phoenix Works; at the Pacific Region Headquarters in Sunnyvale, Cal.; at the Corporate Education Center in Princeton, N. J.; and at the Southern Region Headquarters in Atlanta, Ga. All of these units are being used to heat domestic water.

The CEC installation, for example, is heating approximately 45 percent of the hot water needed for the residence hall and restaurant, and the Southern Region is meeting all the hot water needs of its recent building addition.

Because of their relatively high initial cost, we don't expect to save money with these solar installations, but we are saving considerable energy each year, and, at the same time, we are gaining valuable experience with this pollution-free alternative to fossil fuels.

"... the results have made believers out of everybody"

Left—Hawthorne's fortress-like cooling towers now use 25 per cent less energy thanks to a change in water absorbent material. Below—solar energy collectors at the CEC residence hall are discussed by students Bruce Hamlett and Chris Roberts and Mark Purvis of the CEC staff.

Down the road from the CEC, the Engineering Research Center has taken a different solar approach. They put plastic films on their windows that reflect much of the sun's heat. This reduces the need for air conditioning and has been saving over $15,000 a year. As they say, "It all adds up."

Typical of the numerous small "housekeeping" steps many locations are taking is the application of thermal insulation where it will do the most good. At the Cleveland Service Center, two large steel water tanks used for fire protection systems must be heated in the Winter to prevent freezing. Dave Hall, Plant Engineer at the Eastern Regional Center decided that "Having only one thickness of steel between the heated water and the cold, outside air was just one step above burning our energy resources in the open air." So he cut down the wasteful heat loss by having the tanks covered with polyurethane foam insulation. "It works," says Hall, "and it saves energy and money."

A different kind of plastic played a different kind of energy-saving role at the Hawthorne Works. Situated in a half-acre pond like a medieval fortress behind its moat, are 14 enormous cooling towers. Huge fans pull air across tons of water-saturated filler material. Cooled by evaporation, the water is used for the plant's air conditioning system. Previously, the filler material was wood, which would decay and cause problems. In 1978, Hawthorne's Plant Engineering organization decided to substitute PVC (Polyvinyl Chloride) filler—a material with much more surface area per cubic foot than the wood filler. The result: 25 percent less energy to produce the same amount of cooling.

At the Phoenix Works, housekeeping took another turn. The plant's air conditioning system uses a gigantic refrigeration machine. As dirt and scale accumulate in critical piping sections of this machine, efficiency goes way down.

Because of operating considerations, these pipes had been cleaned only once a year at the most, allowing for quite an accumulation of scale. Then, in 1978, an automatic online system was installed that cleans the pipes several times a day. Efficiency went up 22 percent, saving over 6-million kilowatt-hours and $200,000 since its installation. Gerhard Matz, the plant engineer responsible for the installation, admits there was some skepticism at first, "But the results have made believers out of everybody."

Another kind of energy conservation with great promise is the recycling of plastics. These ubiquitous materials are made from oil, and oil is a non-renewable resource. It's just that simple, and the case for recycling should require no further argument. However, the technology had to be developed first, and that wasn't simple. This development has been, and continues to be, done by Bell Labs, Corporate Engineering, our Engineering Research Center and Nassau Recycle.

Telephone housings, handsets and caps are made of a plastic called Acrylonitrile-Butadiene-Styrene, or ABS for short. In the past, says Corporate Engineering's Walter Boyhan, when these parts were damaged, they were junked and discarded. Now, we are processing them to make new parts. Although, until recently, recycled ABS could not be used to make visible telephone parts because of stringent color standards, it is just fine for many other applications, such as the shop trays used at our service centers to carry parts around. ABS recycling not only saves oil, it saves money as well; reclaimed ABS costs us 25 to 50 percent less than new material would. And, thanks to new work at the Mountain-Northwestern Region and Bell Labs that seems to have solved the problem of matching the original colors, we may soon begin using recycled ABS to make new telephones.

The Bell Labs, ERC and Nassau Recycle team have also been working on a process for recycling PVC —a plastic we use by the ton for wire insulation. As yet, the economics of this very complex process aren't favorable, but, since every pound of PVC is the energy equivalent of two pounds of oil, it's a great item to have on the shelf should we need it.

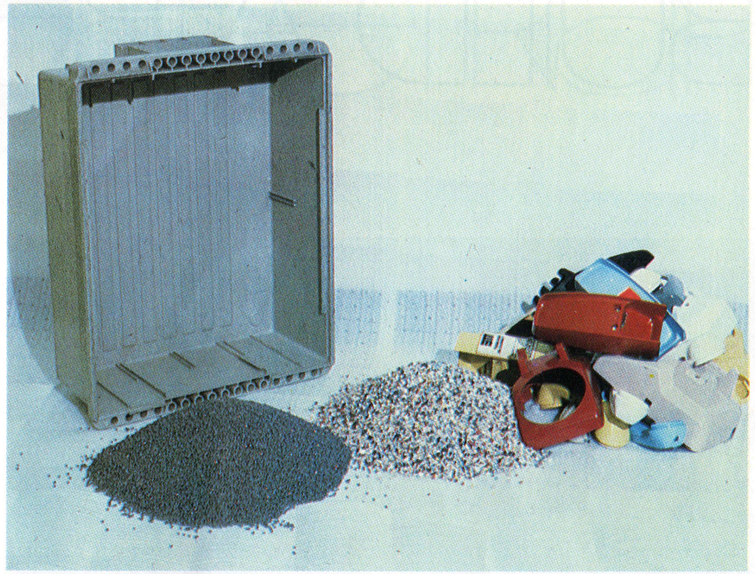
We've also worked hard at saving oil in a more direct way—namely reducing the gasoline burned every year by employees commuting to work in automobiles. We started on this even before AT&T Chairman Brown's 1980 pledge to then-President Carter to support the Transportation Energy Efficiency Program. That mouthful translates into car-pooling. Hawthorne Work's car-pool program has been so successful that nearly one-third of its employees participate. Much of this was accomplished by offering incentives such as reserved parking spots and by helping people get together with a "Car-pool Ride Board" column in the Works monthly publication, the *Microphone.*

Some Guilford Center employees have taken the ridesharing concept one step further. Thanks to the help of a computerized program known as CARPOOL, many of them are now commuting to and from work in chartered buses. Many others are sharing vans and autos. In fact, 68 percent of Guilford Center's people are ridesharing.

To get so large a cooperative effort going, Guilford Center prepared grid maps of employees' residential areas. Employees' names, addresses, and home grids were collected on questionnaires and fed into the CARPOOL computer. Each participating employee was given a list of other employees who live in the same grid area and work on the same shift. Then groups were encouraged to get to know each other and form car, bus or van pools. Special areas are provided in the parking lot for bus loading, and reserved parking spaces are designated for car and van pools.

At the Atlanta Works, Don Timmerman checks the light level of new energy-efficient high-pressure sodium lamps. The new lamps will save about 2,200,000 kilowatt hours of energy and $91,000 per year.

When telephone sets are damaged, their plastic housings, handsets and caps are chopped up and recycled into shop trays for use at our service centers.



Energy considerations have worked their way into almost every aspect of Western Electric operations, including the design of new buildings. The Pacific Regional Center has such energy-conserving factors as insulated building panels, task lighting, reduced window areas, reuse of waste heat from computers and lighting and even site orientation to minimize the effects of adverse weather conditions. Similarly, the architectural treatment for the new Electronic Components Division facility in Orlando, Fla. includes careful consideration of solar angles. In addition, all heating needs will be satisfied by recovering waste heat from process cooling water, and all manufacturing buildings will be windowless to minimize air conditioning requirements.

Another objective of D. A. Heggie's department is that Western Electric employees will follow through in energy conservation off the job as well as on. A prime example of this was provided when two Columbus Works engineers built an electric automobile. With understandable pride, the engineers, Paul Wergin and David Yates, christened the vehicle the W-Y Electric Car and emblazoned their logo on both of its sides. Wergin, who says the converted 1966 Sunbeam Imp costs about one penny per mile to run, became the sole owner when Yates moved to another area and has since sold the car. This unusual vehicle runs on 16 six-volt auto batteries, with a 15-horsepower surplus aircraft starter supplying the power. It has a range of 20 miles at 40 MPH—just enough for the average trip to work, church or the supermarket.

Recently, as part of the Energy Management group's effort to get total employee involvement in energy conservation, Janet Foster organized a company-wide poster-idea contest. Employees and their children were invited to submit ideas for posters that express the company's commitment to energy conservation. Janet, who also edits *Energy and Environmental News* magazine, says good ideas may also be used for calendars, desk pads or bumper stickers. "There's no limit to what we can do," she says. "We want to make everyone feel they are part of the energy conservation program." WE

BUILD A BETTER MOUSETRAP

Above: Two Hopewell Valley girls gleefully try to trap a mechanical mouse.
Below: Tom McCandless delights students with demonstrations of the traps.

By Elizabeth M. Perlman

Photos by Detlev W. Kempe

Catching the spirit of Engineers' Week in a new way

Tom McCandless, a resident of Hopewell, New Jersey, proprietor of Tom's Auto, and master mechanic, has been collecting antique mousetraps for years. Yes, mousetraps—he's got squashers, chokers, one-way-gate traps, electrocutioners, and drowners. He's got one that is labeled "fatal" by its manufacturer and one promoted as a product that will "catchemalive." He has many hand-carved wooden traps that represent the care of craftsmen who fine-tuned the mechanisms to spring precisely and efficiently at the right moment.

One trap was notched for every mouse destroyed under its heavy and exacting arm. Others, made of various metals, had exercise wheels for the mouse's use (as a pet) after it had been caught. Still others were designed with a series of one-way gates and trap doors leading finally to a five-inch-deep can of water.

McCandless brought his collection of mousetraps to Western Electric's Engineering Research Center at the request of Clif Draper, a member of the research staff for laser studies. This exhibit and presentation were part of the company-wide activities scheduled to mark Engineers' Week, but unlike many activities for Engineers' Week, this event was designed to be of general interest. Judging from the large audience that filled the auditorium, it was.

The children shown in the accompanying photographs are not new recruits to the ERC staff. As part of the event, Draper arranged for a contest entitled "Build a Better Mousetrap" in cooperation with the sixth-grade science classes of three Hopewell Valley schools. The children used this project to learn more about the interaction of simple machines.

The entries were judged in two categories, drawings and models, by Brian Hoffman, a member of the research staff in automation; Gene Hoover, a technical assistant in explosive bonding; and Bill Pessel of the model shop. The judges had to choose among models with light-sensitive springs, electrocuting plates, ramps leading to those dreaded watery graves, levers and trap doors, and cages to name just a few. The designs and drawings were done in the best Rube Goldberg tradition, with titles such as "The Better (Best) Mousetrap" add "Mouse Mincemeat Maker."

Ribbons and plaques were awarded to the three winners in each category. Each school will receive $75.00 worth of science equipment from the company for its science program. WE

Above: Tom McCandless shows his hand-made wooden traps to ERC employees.
Below: Gene Hoover, one of the judges, inspects a student's spring trap.

FIRE & FLOOD

By George Watson

Photos by Richard Wood and Leonard Ross

Long Lines asked us to supply and install equipment in one fourth the normal time—and we're doing it

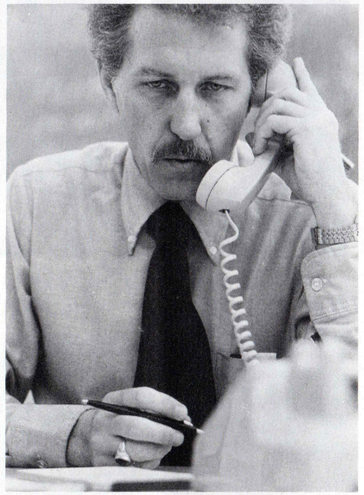
What happens when your best customer finds that its business is outstripping its capacity and needs more of your product faster than ever before? When that customer is AT&T Long Lines and you are Western Electric, you respond with a "fire and flood" reaction.

Long Lines long-distance telephone traffic has been growing so rapidly that it has had to accelerate its route construction, adding to existing links and installing new ones. Long Lines called on Western Electric to supply transmission equipment and to install it on a greatly shortened schedule—often in as little as one fourth the time that would ordinarily be required.

Adding to the challenge for Merrimack Valley was the fact that Long Lines needed for its routes not only the L5E buried coaxial cable system, but the AR6A single sideband radio, DR6-30 and DR11-40 digital radio systems and FR6-30 radio—all newcomers. Merrimack Valley engineers have therefore had to unravel the snags that always attend the introduction of new products to the factory.

"We formed a diversified group here last June—the so-called High Frequency Line Team—with the objective to maximize benefits from the equipment we manufacture, and increase capability as quickly as possible," recounts Bob Wysocki, High Frequency Line Project Engineering Manager at Merrimack Valley. "We adopted the same attitude that we do when disaster strikes a customer, like the Second Avenue fire when equipment is desperately needed. We challenged all the engineering, operating, and support personnel to dedicate themselves to teamwork, enthusiasm, and a positive spirit."

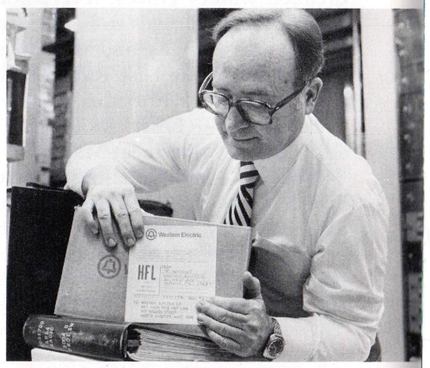
The High Frequency Team was organized under Bill Banton, director of Engineering at the Valley, and Jack Driscoll, director of Manufacturing. All engineering and manufacturing operations associated with the transmission equipment ordered by Long Lines were placed under the authority of the team—under HFL Project Engineering Manager Bob Wysocki and HFL Project Operations Manager John Dreese. Regular meetings were started immediately, and the High Frequency Team still meets every Tuesday and Thursday morning at seven to pinpoint and solve problems almost as soon as they arise.



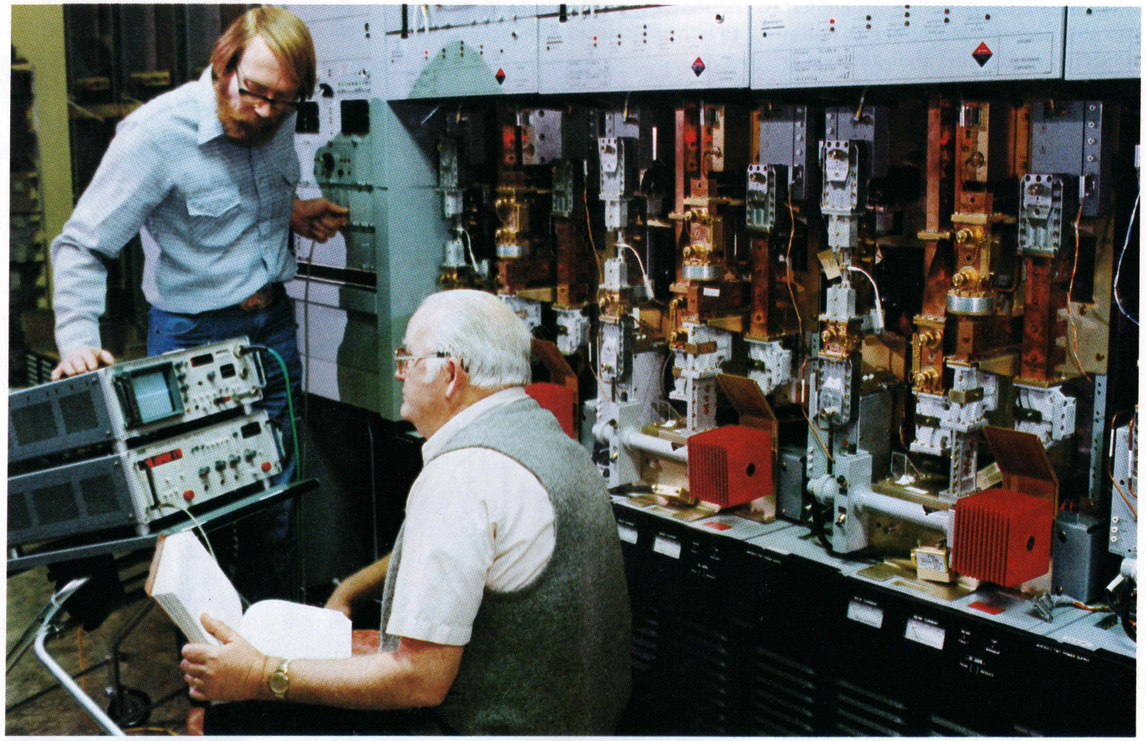
Merrimack Valley's Fred Nesbit gives advice via the installation hot line.

And so Western has mounted an extraordinary program of accelerated manufacturing of multiplexers, repeaters, modulators, oscillators, amplifiers, crystals and apparatus—all the hardware units that make up a complex long-distance transmission system. Western is also, in greatly reduced installation intervals, installing the hardware and getting it on line at a host of sites throughout the United States.

The Merrimack Valley Works at North Andover, Massachusetts, is the prime manufacturing location with help from North Carolina Works, Kearny Works, Kansas City Works, and others. But the job is too big for employees at the Valley alone, even though they are working around the clock, seven days a week. Employees at many other company locations have chipped in, relocating to the eastern Massachusetts area for the duration of the crash program. Western's Bell



Bob Wright affixes a special label that ensures speedy repairs.



An AR6A transmit/receive support bay is checked out by Long Lines' Loren Griffith, Jr. (left), and Western's George Haas. Bay is part of Wayne, Pa., site.

Sales division is responsible for installing the equipment. Working closely with people at Merrimack Valley and at the Material Planning and Management organization at Southgate in Morristown, N.J., Bell Sales has put into practice novel methods for expediting installation.

Perhaps the biggest change in Merrimack Valley's normal procedures was the adoption of "site-by-site" management. "We realized that the number of bays and equipment we could ship fell short of the demand," John Dreese recalls.

"Each route was sequenced with direction from Material and Account Management and Long Lines Headquarters. Then, on an office-by-office basis, we analyzed each order. The production strategy was to convert those office needs into shop production of bays and all materials required for that site. Concentrated installation engineering support reduced installation intervals to recover some of the lost time. This approach allowed Merrimack Valley to concentrate its resources where they would do the most good in terms of meeting the customer's turn-on dates."

To further aid installers, Merrimack Valley maintains a "Hot Line," a special telephone number that installers and engineers can call for expedited help. Fred Nisbet, who answers many of the Hot Line calls, explains, "The Hot Line is intended for fast turnaround on repairs, new or replaced material

to compensate for reduced installation intervals." Because circuit cards may be so new that spares are not yet available, failed ones may have to be sent back to the factory to be repaired. "People will call to say they're sending a repair-and-return item to us by air express, or maybe one of our engineers visiting the site will hand-carry it back to us at Merrimack Valley," Nisbet says.

He then goes to work to ensure that the item is expedited. The item is shipped to Merrimack Valley with a special label that alerts people on the receiving dock that the High Frequency Team is involved. From receiving, the unit is hand-carried to the shop where it's usually assigned a high priority to make sure it gets returned to the site in the fastest possible way.

To augment its own work force, Merrimack Valley "borrowed" expediters, section chiefs and engineers from other company locations. People from the Works at Columbus, Omaha, Northern Illinois, Kansas City, Oklahoma City, Atlanta, Baltimore, Phoenix and Reading, from Bell Sales Southern, Southwestern and Eastern Regions volunteered to serve in the High Frequency Team organization and support organizations at the Valley. M. M. (Bubba) Williams, an ESS installation job supervisor from San Antonio, Texas, was the first person loaned to Merrimack Valley for HFL.

"My orbit supervisor called me on August 6, 1980 and told me that as of August 18 I had a new assignment at Merrimack Valley, working on HFL," Bubba said. "My ESS, SMAS projects were turned over to other installation supervisors and I traveled to the Valley on August 18. G. A. (Jake) Lovett and myself have the AR6A product. We have been engrossed in site-by-site analysis from the Hot Line, sequence lists analysis, to planning and coordination trips. Since my arrival, we have been working seven days a week—and a day might be 12 to 14 hours long. Presently, we are working with over 490 job sites (over 2000 order numbers) in various stages of planning or field support."

John Larrimore, now an expediter for the High Frequency Line, recalls that there was an announcement last September 1 at the Columbus Works about openings at Merrimack Valley. Larrimore expressed interest and "about a week later," he says, "I got the word: 'you're leaving Monday.'" Almost overnight, Larrimore left his data-center responsibilities at Columbus to help Merrimack Valley—ironing out problems, smoothing the way so that subsystems roll out on schedule.

Another Columbus old hand, Robin Smith, remembers a memo circulated at the Ohio location in which supervisors were asked to inquire if people reporting to them had any interest in relocating to Merrimack Valley. She did indeed want to go, attracted not only by the challenge of the High Frequency Team but also by the prospect of visiting New England. Today Robin Smith is in charge of a production line making transformers and inductors used in the L5E and AR6A systems.

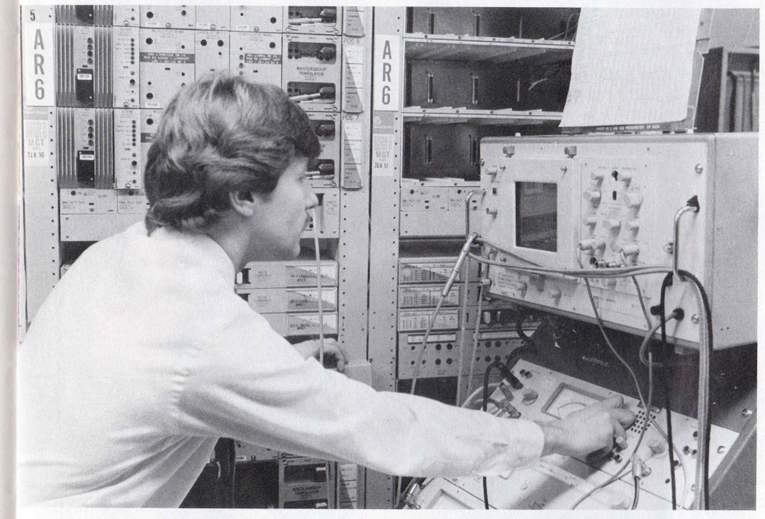
Section chief Robin Smith (left), here conferring with layout operator Celia Sudol, transferred from the Columbus Works to aid the "fire and flood" program. This production line turns out parts for the High Frequency Line.

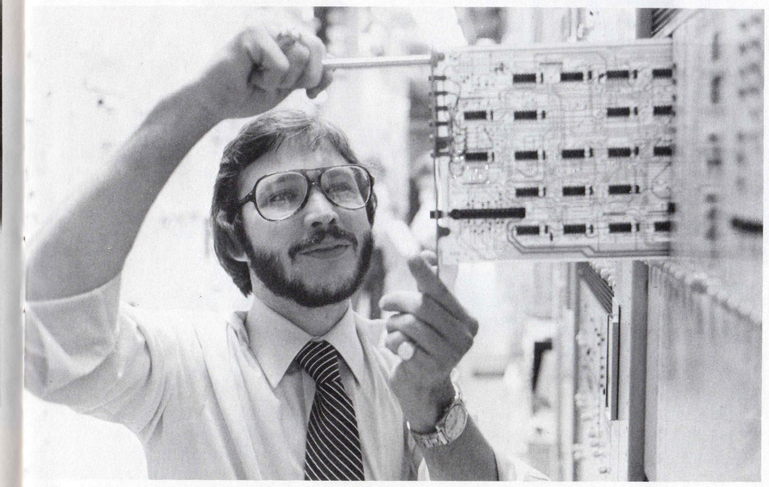
In all, 26 expediters, 20 section chiefs, six installation job supervisors, four regional installation engineers, eight production engineers and two department staff members left other locations to join the High Frequency Team.

All the Bell Sales regions through which the new Long Lines routes pass have been no less concerned with meeting site turn-up dates. Bell Sales has adopted an installation schedule that meshes with Merrimack Valley's site-by-site shipment schedule. Usually, installers would have 80 to 90 percent of the equipment on site when they started. With the drastically reduced installation interval, installers start to work on each unit of equipment as soon as it arrives.

The results achieved by the High Frequency Team speak for themselves. Merrimack Valley has doubled its output of L5E and AR6A equipment. Bell Sales has reduced its average site-installation period from 16 weeks to as little as 4 weeks. And from the start of the fire and flood program in June until the end of December, 20 HFL routes with about 100 new sites were turned up.

"We won't keep fire and flood up indefinitely," explains Bill Banton. "In fact, we've already taken steps to return to a less intense approach. But the results that the High Frequency Team have achieved demonstrate once again what dedicated people in the Bell System can do to solve common problems." WE



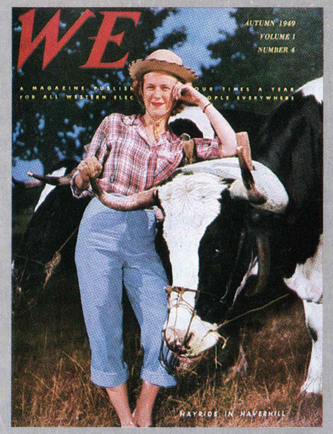


Above, Carl F. Wheatley III of Eastern Region tests mastergroup translator at Long Lines installation in Wayne, Pa. Below, Eastern Region's Ed Yates inserts a circuit board. Special efforts reduce delivery/installation time by 75 percent.

At a Thursday morning meeting of the High Frequency Team at Merrimack Valley, John Dreese (left) and Bob Wysocki solve operations and engineering problems to make sure a delivery date is met.

The Good Old Days

WE magazine doesn't pretend to hold a mirror to the world, but, collectively, its covers provide a colorful reflection of the times in which they appeared. These early scenes, for example, running from the autumn of 1948 to the summer of 1953 clearly depict an age somehow different from our own—more innocent perhaps, and certainly more relaxed—a world of charming children, pretty girls and cuddly animals.



Shirley Bready of the Haverhill Shops with oxen who provided the power for a hayride in the country.

Hawthorne's LaVergne Budil and Jerry Jucera at the summit of a ski slope, fully equipped and ready to go.

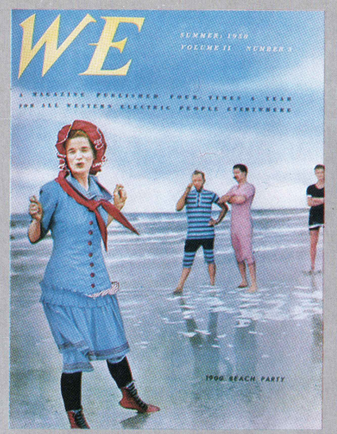
Hawthorne's "Hellow Charley" Queen Marion LaSota and her regal collies.

Newcomers to the Allentown Works in 1951 were Jo Glovash, Mary Moschouris and Dotty Sheirer.

Joan Crooks models in a scene that is reminiscent of many modern television jeans commercials.

Three-year-old Barbara Ann Avera shows her bosom-buddy Raggedy Ann just how much she loves her.

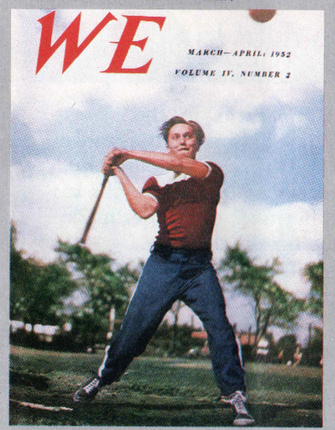
With paint-smeared fingers, Billy Stephen shows his sister what the artistic temperament is all about.



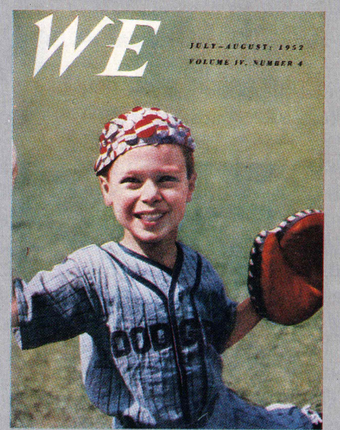
Susie Smith of the Jacksonville Distributing House and some admirers in colorful 1900 beachwear.

David Sunanday feeding a rare and beautiful three-week-old Hampshire lamb.

Winsome Linda Shugars prepares for the Christmas season with some fairly serious holiday reading.



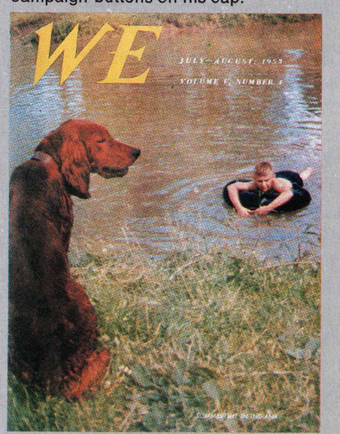
It's spring again, and Hawthorne's Milt Hanslik prepares to knock one over the fence for a homer.



Mike Conning's outfit blends baseball and politics. Those are old campaign buttons on his cap.

Waiting for the wind, Allentown's pretty Val Kotzmann poses on the ice with her skate-sailing equipment.

Hungry chickens gather around Judy Keck as she generously scatters feed on her grandpa's farm near Burlington, N.C.



A boy and his dog and the old swimming hole—what more could you ask for on a sunny Indianapolis afternoon?

In his office at Guilford Center, General Manager Fred Lipscomb (left) discusses terms of a license agreement with Director Ed Baldwin.

Cross Licensing

By George Gray
Photos by Buddy Spoon

A combination of high diplomacy and horse trading

Inventions originating in Bell Labs, in Western Electric or in the Bell Operating Companies are among the System's most important assets. Not only are they the ingredients for new products and services, they also serve as vital trading cards for exchanging patents with other companies both here and abroad. Bell System technology is world famous, and much of it can be adapted to other technologies besides telecommunications.

It has been the policy of the Bell System—for some years before the Consent Decree of 1956 cast it in concrete—to grant non-exclusive licenses to other companies. There are sound dollars-and-cents reasons for doing so—reasons that are if anything more valid today than they were right after World War II when the policy was first announced. Judicious cross licensing of Bell technology gives our scientists increased freedom to probe and discuss the frontiers of knowledge with scientists outside the System with fewer worries about the constraints of other companies' patents.

There are three major types of patent license agreements that Western Electric negotiates on behalf of the Bell System:

1. Licenses are exchanged with other patent owners, so that each gets the particular rights he desires under the patents of the other. Any imbalance caused by differences in the values so exchanged are adjusted by royalty provisions.

2. Licenses are granted to manufacturers to make, use and sell apparatus concerning which the System has patented inventions to others on a royalty basis.

3. Licenses are granted on a royalty basis to those who desire to use specified apparatus in their own business (as distinct from those who sell such apparatus to others). Such licenses include the right to have the licensed apparatus made by anyone for the licensee.

Western Electric was delegated to operate the patent licensing function on behalf of the Bell System by AT&T in June 1946. The organization never has been a large one, although it has at various times been headed by its own vice president. For the past four years, the 40 or so people in the group have been located at Guilford Center in Greensboro, N.C. and the General Manager is Fred Lipscomb.

Fred began his Western Electric career at Laureldale (now Reading Works) in 1953, where he helped engineer the production of the first grown junction transistors and contributed to the development of the plant's first semiconductor mechanization equipment. He had previous assignments in Patent Licensing as well as in Accounting at Headquarters, Engineering at Hawthorne and in Account Management in the Southern Region.

He makes this point: "The main thrust of our effort is to negotiate cross licenses with inventive organizations working with and getting patents in our kinds of technology. That involves a lot of diplomacy and horsetrading. Royalties are almost incidental to this primary goal—which we strive for but don't always reach.

"You have to realize," he continues, "that people are not out there battering down our doors trying to obtain licenses. The effort is mostly the other way around. We are out there working to persuade them that cross licensing will be mutually beneficial. It's at this point that royalties come in to provide an equitable balance to the values exchanged in the agreement.

"Under the Consent Decree, we must provide technical information on the products of the types we sell to the Bell System to U.S. domiciled companies. A patent license agreement is the first step, then a technical information arrangement often follows. It gets more into the design details of equipment we sell to the operating companies. A great many companies do come in and inquire about our technical infor-

A typical negotiating scene with WE people led by Wally Blake and Sumitomo Electric officials led by Dr. Tsuneo Nakahara (at far end of table).

mation, and we spend a lot of time answering their questions, but relatively few follow through. Most walk away without a license. Much of our equipment is designed to meet unique Bell System needs and is not readily adaptable to the non-Bell market place.

"Not everyone is as open as the Bell System in publishing research results and presenting findings at scientific meetings. We have dozens of technical journals that come in here and we attend many technical-association meetings. What I'm trying to get across is that it takes a great deal of digging to find out who is doing what on what scale as that might relate to the Bell System patent portfolio. I don't mean this in a cloak-and-dagger sense. Everything we do in the Bell System has to be above reproach, because that's the System policy, because we are big and because we operate under a Consent Decree.

"It is vital for us to be alert to what's happening around the world in our industry and related fields. We don't want to be in the position of being closed out of an area that might provide a solution to our problems by someone else's patents under which we don't have, or can't get a license. It has happened. We don't have a monopoly on brains. Lots of other scientists are working on the same sort of problems that our people are. And many of them are equally bright. They come up with ideas and patent them. Unless we have agreements with them, our freedom of direction could be severely hampered. Or, they could sue us, which has also happened.

"Much more common is the reverse of that—someone using one of our patented inventions without bothering to take out a license or inform us of the fact. It's therefore incumbent on us to remind them. Usually, we send a letter or call them. Sometimes we visit them. And sometimes we get thrown out. At that point, we consider filing a lawsuit, which we do reluctantly."

"We call it doing our homework," says Ed Baldwin, Director of Patent Licensing and the man in charge of licensing domestic companies. He joined Bell Labs in 1948 as a member of the technical staff and transferred to Western in 1964 as Manager of Military Systems Engineering at Burlington, N.C. He's been in his present position since 1975.

Above. Dept. Chief Dave Okeke reviewing personnel forecasts with Ed Baldwin. Right. Dottie Garcia tracking down a patent summary in the *Official Gazette.*

"When you look at a product," he says, "it is not always apparent what process was used to fabricate it. And with integrated circuits buried within a product, it is not always apparent what circuits are used. And so it requires detective work to find out if our patented inventions have been used without our permission.

"We begin by staffing with people who are extremely knowledgeable in the fields to which they are assigned. And then their antennas become further attuned by participating in negotiations. They get to know what to look for and listen for. They'll hear something at a trade show in Hanover, Germany, for example. Then at a meeting in Tokyo, they'll hear something similar. Maybe next it will be an ad in a French technical publication. Suddenly, it becomes fairly certain that some manufacturer, say in the U.K., is using one of our patented processes—and he is not licensed.

"That example makes it sound as if we do a lot of running around, which may be misleading. Most of the discovery comes through screening the trade press. Excluding trips back and forth to New Jersey, where the BTL patent attorneys are located, I doubt that we're out of the office six weeks in a year. I think that 20 percent of their time is probably the maximum for the group."

"We encourage our licensees to come in to visit us for negotiations" Fred Lipscomb says picking up on the point, "particularly if we have a cross licensing arrangement. Then visits can sometimes be reciprocal. I recall some years back, when we were about to start building a new plant. We arranged a visit for one of our engineering managers to a licensee firm abroad. He got an idea from a line arrangement he saw that saved us more than $1-million. It had nothing to do with patented processes; you might call it a housekeeping detail."

Baldwin continued: "As technology moves forward—and it is doing so at an ever-increasing pace—research in the more advanced companies all around the world is shifting away from hardware to software. It's certainly true within the Bell System. And much of software is not patentable. So despite the fact that the Bell System's budget for R&D is increasing, a greater proportion is going into software.

"Consequently, there has been a decreasing inflow of patent items into our portfolio. When I first came on board several years ago, there were about 10,000 Bell patents currently in effect in this country. That number has been declining and I would guess it's now down to around 9,500.

"To realize some return on Bell System software development, we now license perhaps 600 institutions and firms. The great majority—over 500—are educational institutions all around the world. Software licensing is one aspect of our job that is revenue based, although the amounts are not large. The "right-to-use" fees that we collect go to the Bell System company that developed the program. In the case of programs developed for use by Western or Bell Labs, the money is used as an offset against R&D expense. In the case of BIS (Business Information Systems) programs, the fees we collect are split pro-rata among the various telephone companies who financed that work."

Picking up on the foreign patents theme was C. W. (Wally) Blake, the Manager in charge of the group that negotiates licenses with foreign firms.

"Generally speaking," Wally says, we file for patents in foreign countries on only about 30 percent of our U.S. inventions. It's not just a question of expense—although that is a factor since most foreign countries charge a maintenance fee each year for each patent that can run to several hundred dollars per patent. And Western has to engage attorneys in each of those countries to handle all the paperwork.

"One famous example is the invention of the transistor. We filed on that in 24 countries. But an invention has to be pretty world shaking to get coverage that broad. Six or seven countries these days is the usual filing pattern.

"Some of the inventions that appear to be valuable as far as licensing goes these days relate to magnetic bubbles, gated diode switches, and modified chemical vapor deposition processes for making light-guide.

"When it comes to filing for a patent abroad," Wally continues, "we try to make an educated guess on which inventions are going to be important in which countries during the limited lifetime of patent protection. Patent Licensing is usually a party to the filing decision since we can contribute some knowledge of the invention potential in various countries. We might choose a certain country if we feel there is a possibility that a laboratory in that country may come up with something useful to us five or ten years down the pike. That is, if they have scientists there who are working in areas that we feel are interesting. Our filings create trading stock which is useful in negotiating for licenses to the Bell System.

"Nowadays, there's another factor to be considered in foreign dealings. As AT&T International moves into the international arena competitively, technology transfer is often a condition of sale of equipment. We do more than license patents and software; we also license others to use Western's proprietary technical information under suitable contract provisions.

"A great many patented inventions never get used," he continued. "In fact, you might say most of them just sit on a shelf somewhere. What happens is that you come up with several solutions to the same problem. You pick one that looks the most promising to go ahead with, but you still file on the others to protect your flanks. If the one you pick flops, you may have to go back and try another. You don't want to have to go out and buy it back from somebody else who came up with the same idea after you previously decided to forego it.

"And we're certainly not the only ones watching to see what others are doing and the directions in which they are moving. I received a marked copy of the Bell Labs Record the other day from a patent attorney who works for one of our licensees in Japan. He had underscored several paragraphs and drawn lines to patent numbers written in the margins. He was informing us in a direct way that we were probing areas where his company also holds a patent position.

"All in all, it's an exciting line of work. We not only help the company recover some of its research and development costs, we also help our scientists and engineers by broadening their information sources. I like to think we're contributing to the advance of technology." WE

Left—Research staffers Kon Lin (left) and Mike Cassidy join Laura for a look at production circuit boards designed at the ERC to do performance testing of soldering fluxes.

State of Flux

By Jane Moulton
Photos by John Carnevale

Laura Turbini really gets around, but most of her connections are made with solder

Usually people return from places such as London and Munich with reports for family and friends of visits to Big Ben and Buckingham Palace, to Munich's Glockenspiel and hofbrau houses.

Usually. But not always.

After a trip to England and Germany last fall, for instance, Laura Turbini first reported back to her colleagues at WE's Engineering Research Center in Princeton, N.J., on the status of soldering technology.

One of 23 research leaders at the ERC, Laura's trip to Europe was devoted not to a vacation tour of historic landmarks, but primarily to attending international business conferences as a representative of Western Electric.

On one stop, in Brighton, England, she attended an international conference along with many representatives from other leading industrial companies.

"The company is frequently invited to participate in these types of conferences and we send a representative whenever possible and appropriate," she says. "And now we're trying to participate more often as competition becomes a more important concern and simply as a way to stay on top of what's happening in various areas of the telecommunications business. It really helps us to find out how other companies are coping with problems, where their research efforts are being channeled, and the general progress they're making with new processes and technologies."

At a major session sponsored by INTERNEPCON (International Packaging Conference), Laura delivered a paper on "The Reliability of Detergent Cleaning of Flux Residues." In Munich, she addressed a smaller group on "The Chemical and Environmental Aspects of Condensation Reflow Soldering."

Both reports were based on WE's research in soldering—a process used in virtually every major WE manufacturing division.

"It really gave me a great opportunity to learn what other countries are doing with the same technologies we're working with and to learn something about their philosophies regarding those technologies," says Laura, who currently heads a 13-member group that researches various aspects of soldering as it is related to WE's manufacturing operations.

"In terms of my immediate area of concern, soldering, I found that we are very much in the forefront of the technology internationally. Although the Europeans' concept of flux is similar to ours, for instance, in that it is non-corrosive, they often don't clean circuit packs after soldering. The Europeans are evaluating real-life fluxes, but we are testing them on real-life boards with components. They are using boards with test patterns, but not with actual components.

The focal point of Laura's presentation in Munich was also the subject of a magazine article, "Chemical and Environmental Aspects of Condensation Reflow Soldering," which she co-authored with a member of her staff, Frank Zado. Both received WE's annual Award for Excellence in Technical Writing as a result of the article's appearance in the January 1980 issue of *Electronic Packaging and Production.* Selected as the best article by a WE employee in an outside publication, the piece discussed numerous chemical reactions that occur in a condensation soldering facility—some of which are deleterious to equipment and others which require procedures to ensure operators' safety.

"Basically, what we do here at the ERC is improve currently used methods and develop new manufacturing processes," says Laura.

Left—ERC research leader Laura Turbini on the phone with manufacturing engineers in the field and (below) with Barbara Walsh in the solder process lab testing an automatic switching board.

"Part of the time, the soldering research group works directly with engineers at our manufacturing locations to solve problems. That frequently involves working with a 'real-life' board, one that's in use in specific manufacturing operations. We analyze contaminants, for example, that cause production soldering problems and recommend changes that lead to higher production soldering yield," says Laura.

A rotational program provides the opportunity for manufacturing locations' engineers to actually work hand-in-hand with researchers for one-and-two-year periods.

"It's very profitable," says Laura. "Not only does it help us understand the real needs of the engineers out in the field, but it also enables them to learn about the capabilities that exist here at the Center for problem solving."

The larger portion of the soldering group's time, however, is currently devoted to three areas of R&D work: developing new generations of soldering fluxes as a prime method of cost reduction; evaluating new cleaning methods to replace potentially hazardous chlorinated solvents; and mimicking plant production using real-life boards to evaluate new materials.

In addition, Laura recently chaired a symposium for researchers, works' engineers and Bell Labs representatives on Printed-Wiring-Board-Soldering Interconnection Technology.

Laura prefers to take a multi-discipline approach to her group's problem-solving tasks. "In my two years as a research leader," she says, "I've tried to gather a mixture of talent, of people who are technical specialists, but not all in the same area.

"The people who work for me have degrees in chemistry, physics, metallurgy and mechanical and chemical engineering. I think that variety gives us an added dimension, a better perspective toward the problem solving we're faced with than if everyone's orientation were in chemistry or just one other of those disciplines."

It also provides a valuable learning experience for the group's men and women who might otherwise be limited to working with projects that concern only their particular areas of specialization.

Being a research leader has proved a learning experience for Laura, too, in human relations as well as the technical aspects of her work.

After receiving her doctorate in chemistry from Cornell University in 1974, Laura applied for a variety of university and corporate positions. Finally, she took an offer from Western to be a member of their research staff at the ERC.

Laura's colleagues have adjusted to her holding an unusual position—she's a nun.

Most people are aware of the changes that have taken place in the role and lifestyles of nuns and priests. But it can still be a disconcerting discovery for some, at least initially.

"Many nuns have broken out of traditional roles—teaching, for example, and have taken their own apartments and jobs, but most tend to go into more community-related, social-service-type work. It's still relatively unusual to find someone who is a nun holding a corporate position.

"The people I work with seem comfortable about it, however," says Laura, "at least in part because I'm comfortable about it myself." WE

Above. At Omaha Works Norman Rohloff aligns wires, in this case 24-gauge polyethylene insulated, for feed into a cable strander.

Left. Roland Horn moves colorful reels of distributing frame wire from temporary storage to packaging. Each reel weighs about 100 pounds.

WORLD OF WIRE

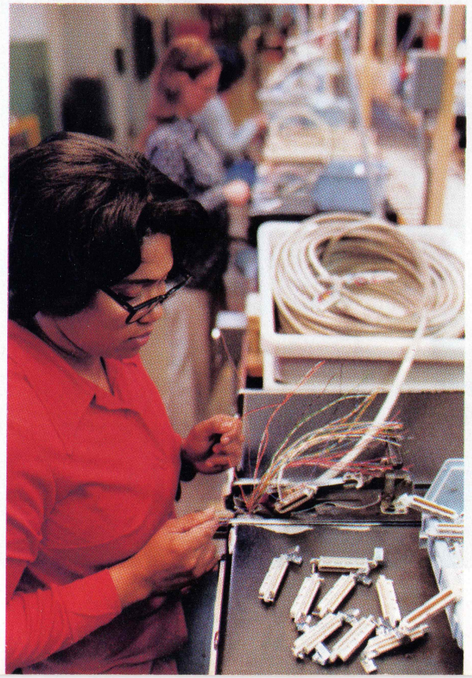
Wire is one of the oldest manufactured products known to man. Its origin, like that of the wheel, lies somewhere in prehistory before man learned to write. Even the "modern" method of making wire by drawing it through dies of decreasing diameter dates from the Middle Ages. Wire is ubiquitous. It's an ingredient in all sorts of necessities—nails, fencing, screening, pins, electrical transmission lines. Western Electric has been a major supplier of wire to the telecommunications industry for more than a century. Today we offer thousands of wire and cable products, produced at five Works: Atlanta, Baltimore, Hawthorne, Omaha and Phoenix. The great variety of products comes from the different conductor materials, the different insulating and sheathing materials and the hundreds of color combinations available in sizes from single strand to hundreds of pairs. This photo essay by Joe Gazdak focuses on the variety at just one location: Omaha. WE

Last year Western Electric produced enough wire to provide a 900-pair cable stretching from Portland, Me. to Portland, Ore. with enough wire left over to reach the moon. Below. Henry Novak removes a large reel from a strander.

Above. Karen Moore removes binders from a 900-pair PIC cable stub, used to "stub out" some pairs for use outside the main pressurized cable run.

Left. A spool of F cross-connect wire is provided inside each feeder distribution interface.

Below. Helen James attaches connectors to cable for use in central office hookups.



Above. Roy Schuster tests continuity and resistance of distributing frame wire prior to shipment. Right Bernice Salkeld adjusts a machine that braids tinned-copper wire around cable for electrical protection.

Riding High

These Pioneers build a different kind of tricycle

What does it take to get a Pioneer project off the ground? First, you need a worthy cause. Then you need an idea of something practical you can do about it. This usually involves raising money. But mostly it takes concerted effort by a lot of people—working as hard or harder than if they were being paid.

A case in point: A heart-warming and highly unusual solution to a problem—a hand-operated tricycle for crippled children who can't pedal a regular one. A major project of the Pioneers at Rolling Meadows, this worthy cause was originally suggested by the Easter Seal Society in nearby Woodstock, Ill. The request came in to Community Service Chairman, Fred Drehobl, via John Sites, a committee member who had visited the Easter Seal Center. The Easter Seal people needed a hand-operated tricycle for a child who had no mobility in her legs and they had heard that the R. J. Reynolds Tobacco Company in Winston-Salem, had at one time offered such a vehicle through their community services program. Could the Pioneers help them out?

The Pioneers at Rolling Meadows contacted the tricycle makers at Reynolds and obtained plans and permission to use their basic designs. As they learned, what you do is start with a standard 16-inch AMF* tricycle and make a number of modifications. Instead of pedals you make solid stirrups for the feet to go in. And instead of handlebars, you make hand-operated cranks connected to the front wheel by a chain. All of the modifying parts have to be handmade and that costs money. According to Chapter President Bob Babinec, "Even though AMF has provided the basic tricycles at cost as a community service gesture and a number of other suppliers have donated their services, the cost is still running us $75 to $80 apiece."

To raise money, the Rolling Meadows Pioneers ran an aluminum-can drive during Earth Week last spring. They collected more than 1,800 pounds and netted around $400, which paid for the first four tricycles they built. These were received with such enthusiasm that orders began coming in from all over the country, as the word spread through Pioneer channels. At last count, Babinec had orders for 40. Twenty have now been assembled and the aluminum-can drive is run continuously. A big truck comes by the Rolling Meadows parking lot for two days each month to collect the cans the Pioneers have accumulated. But that's getting a little ahead of the story.

Turning the clock back a year to when the project was just beginning to get moving, the individual who personalized the project for the Pioneers at Rolling Meadows was five-year-old Vicki Wiley. Vicki, the daughter of John Wiley, a computer equipment operator at the Regional Center, suffers from *spina bifida*, a disease that immobilizes the lower extremities and makes it impossible for her to walk or to sit up unaided.

When John Wiley heard about the hand-operated tricycle project, he saw a chance to give his daughter the means to move around under her own power, so he contacted Marge Pechan, Pioneer Administrator at Central Region headquarters. John wanted to buy the tricycle but the Pioneers were so touched by Vicki's plight that they wanted her to get the very first one as their gift. That first one was built by Larry Olson and Jack Mann, mechanical expert and future Pioneer, and delivered to Vicki on May 13, 1980.

As a result of their work with Vicki, Jack and Larry came up with some ideas on further modifications. They also were more determined than ever to go on with the program, because the look on Vicki's face when she found she could move around by herself was so satisfying.

The Easter Seal Society's local chapters got the second and third tricycles and their reaction was as enthusiastic as the Wileys'. The fourth went on display at the Pioneer General Assembly and prompted inquiries from all around the country.

As word of the program spread, a great many people became involved besides the members of the Pioneers. A company in Tulsa, Okla., donated hand-milled parts such as axles, bearing housings and handle bars for the tricycles. The owner, Bob Fisher, had never even heard of the Pioneers, but he had had polio as a boy and could not ride a bike. When he heard about the project he stated he would like to help because of his own childhood experiences. He is still in a wheel chair.

A number of other companies mostly in the Chicago area also contributed. Teletype, for example, produced the chain guards. The Illinois Service Center helped out with some spray painting. Sycamore Container donated some shipping cartons. John Massey of Warehouse Engineering made the footrests.

One of the most recent recipients of a hand-operated tricycle is nine-year-old Stephanie Principato, granddaughter of Bob Moran, who works at Rolling Meadows. Last August, Stephanie, who is afflicted with *spina bifida*, was in Chicago visiting her grandparents. Bob had heard about the Pioneer's tricycle project and wanted Stephanie to try one. If she liked it, he'd buy one as her Christmas gift. She loved it, but the Pioneers insisted on donating it—for Christmas.

It took forever for all the parts to arrive and the week before Christmas everything was done—except for the chain guard. Bob Meier from the Illinois Service Center located a supplier who did the job quickly, but it was now the weekend before Christmas and there were great fears that Stephanie would not get her tricycle in time.

And here's where the Pioneer teamwork really came into play. Bob Black and the Regional Center's Transportation Department contacted Airborne Freight, who carried the tricycle to Florida free of charge. And in Florida, two WE retirees Ralph Poulter (formerly of Rolling Meadows) and Bob Wellner (formerly of Eastern Region) drove four hours one way to pick up the package at the airport and deliver it to the Principato home on Christmas Eve.

Stephanie received her gift and was overjoyed. Her parents lifted her from her wheelchair and put her on the tricycle. She rode around on the rug and then she wanted to go outside to ride up and down the sidewalk—just like the other kids. She was, in short, one happy little girl. WE

Left—Little Vicki Wiley proudly demonstrates her skill on her hand-propelled tricycle. Above—Rolling Meadows Life Members at work assembling hand-propelled tricycles include, left-to-right, Hank Carlson, Truman Higgins, Larry Olson, John O'Connor, Irv Olson, Jim Lynch and Ed Cherry.

*Trademark of American Machine and Foundry Co.

ILLUSTRATIONS BY BARRY ROSS

Living Dangerously

By Paul Chance

Daredevils tend to be a lot more safety-conscious than the rest of us

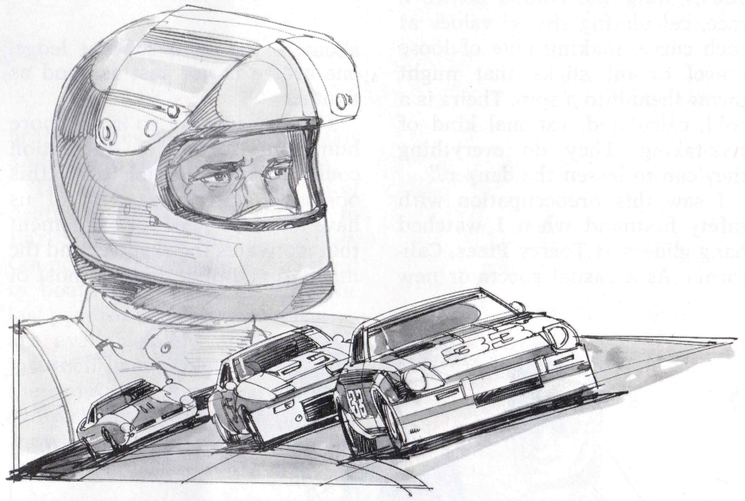
This is it, your first jump. As the pilot approaches the target area he yells, "Jump run!" and the jump master — your instructor — tells you to get to the door. Once there, you look down at the miniature people 3,000 feet below and wonder, "Am I really doing this?" The pilot cuts the engine and you hear the master say, "Get on the step." You lower yourself out of the plane, your left foot resting on the step, your left hand on the door frame, your right gripping the wing strut. You stand there a moment, noticing how quiet it is and feeling the 75-mile-an-hour wind on your face; then the jump master slaps you on the leg and says, "Go,!" That's the signal, it's time to fly.

If you are like most people, you probably have difficulty putting yourself into this scenario—I know I do. Most of us think that you have to be crazy to be a skydiver. As someone once said, "Why would any sane person want to jump out of a perfectly good airplane?" Are skydivers really crazy? What about professional race car drivers? Is it madness to make your living at 180 miles an hour? Then there is the ski jumper, that indomitable spirit who races down a vertical 'S' curve at speeds of up to 90 miles an hour. Or take hang-glider pilots. They can be seen launching themselves over cliffs supported by a colorful batwing affair made of Dacron™ fiber, aluminum tubing and air. Is that a sane way to spend Saturday afternoon?

Oddly enough, studies show that these people are far from crazy. On the contrary, most of those who participate regularly in what might be termed dangerous sports are better put together than their less adventurous peers. Dr. Bruce Ogilve, Professor Emeritus of Psychology at San Jose State University in California, has studied skydivers, sports car racers, aerobatic pilots, downhill racers and others who risk their necks for fun or profit. He finds that they are, on the whole, an emotionally stable lot. More than that, the more dangerous the sport, the better adjusted the person usually is.

But if they are not crazy, why do they do it? Why do some people choose to live dangerously? If you ask the athletes themselves, chances are they will say, as skydiver Ray McCawley did, "Why does anyone do anything? We do it because we enjoy it." Fair enough, but what is it that makes such sports enjoyable enough to risk dying for? Dr. Marvin Zuckerman, Professor of Psychology at the University of Delaware, believes that it is the stimulation, the physiological arousal—what most of us would call excitement—that gives these sports their appeal. Dr. Zuckerman maintains that each of us needs the psychic jolt of excitement. But what is exciting for one person may be terrifying for another and almost boring for someone else. The optimum level of excitement for a given individual depends upon the complex interaction of a number of variables, including the sensitivity of the individual's nervous system. As a result, some of us get all the excitement we need from a weekly bridge party or a hot game of backgammon. Others must climb mountains, race cars or jump out of airplanes.

The rare breed of men and women who must have the excitement that comes only with danger do not, however, take the risks of their sport lightly. Instead, the majority of them seem to be almost obsessed by safety. As Ray McCawley told me, "You always are thinking about safety: Have I checked all of my equipment? Are the con-



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ditions right for a jump? Am I skilled enough to do this kind of jump?" Dr. Ogilve says of these athletes, "They plan, they anticipate, they prepare." He points out, for instance, that aerobatic pilots have detailed contingency plans covering every conceivable difficulty they could get into. They know well in advance what they must do if their engine dies while they are doing an outside roll, or how they must react if they are in a spin and the rudder control fails. "The best race car drivers," he adds, "walk the course before a race, calculating the 'g' values at each curve, making note of loose gravel or oil slicks that might throw them into a spin. Theirs is a cold, calculated, rational kind of risk-taking. They do everything they can to lessen the danger."

I saw this preoccupation with safety firsthand when I watched hang gliders at Torrey Pines, California. As a casual spectator new to the sport, I became impatient waiting for someone to go aloft. There seemed to be endless checking and rechecking of equipment; adjusting and re-adjusting safety gear and the glider itself; and waiting, waiting, waiting, while poised at the precipice, for just the right conditions. To a person who is about to jog off a 200-foot ledge, one breeze is *not* just as good as another.

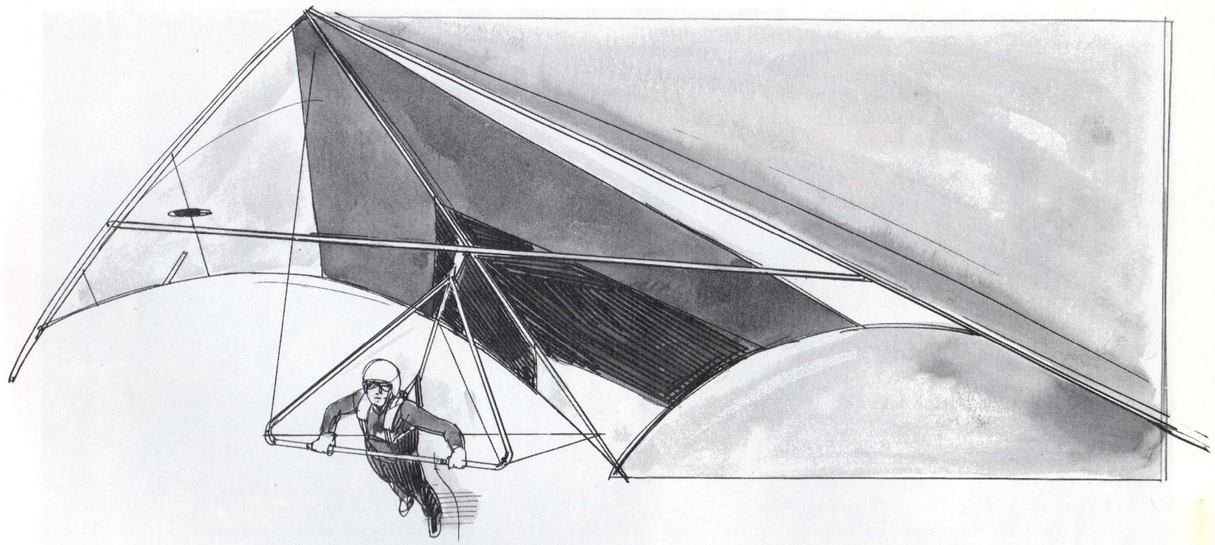
Weekend athletes take chances that would make a skydiver blanch

Those of us who go in for more humdrum forms of recreation could learn something from this obsession with safety. All of us have the same need for excitement that motivates the skydiver and the mountain climber, but for most of us this need is satisfied by less exotic pursuits: snow skiing, snowmobiling, rock climbing, backpacking, swimming, boating, water skiing, diving, hunting and fishing. Unfortunately, the familiarity of these sports and their reputations as relatively safe activities can lull us into a false sense of security. The result is that some people who would not dream of scaling Mt. Everest or racing in the Indianapolis 500 live just as dangerously as those who pursue these and other high risk sports.

Take, for example, fresh-water fishing. I used to live near a rugged canyon in Northern Utah. Every summer, people would go into that canyon to fish in its stream and every summer one or two of those people came out dead. The stream was not particularly devilish. Usually a lone fisherman would slip on the river bank, hit his head on a rock and be knocked unconscious. In most cases the victim drowned in one or two feet of water. Such accidents might not have ended so tragically had the vacationers taken along a companion. Going alone is like skydiving without a reserve chute.

Similarly, boaters lose their lives because they do not wear life jackets or follow routine safety procedures. Snowmobilers are injured when they run into wire fences they would have avoided had they inspected their course beforehand. And many of those who think you have to be crazy to go scuba diving among sharks think nothing at all of taking a dip after downing a few beers.

Another way that commonplace sports become high risk sports is through a lack of training. The typical skydiver spends several hours in formal training before that first, carefully controlled leap into space. Would-be mountain climbers spend long hours working their way up the side of a rock only a few feet above the ground before they strive for higher goals. Hang-glider pilots make many practice flights from a

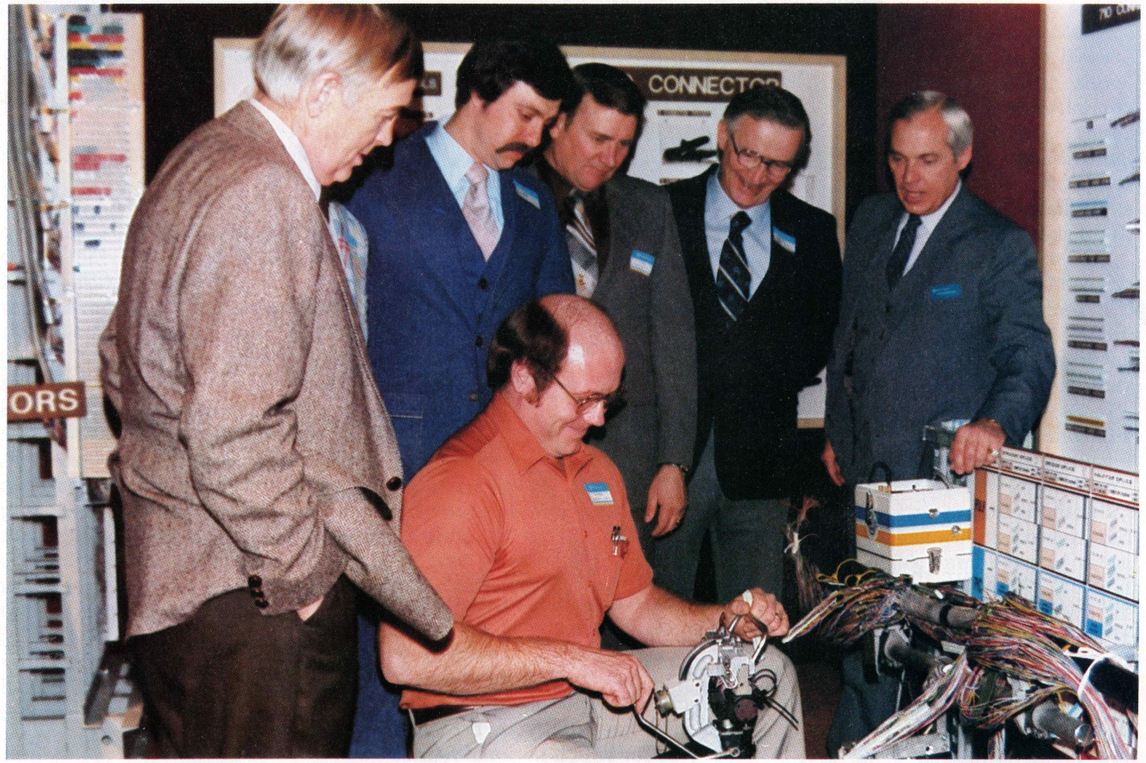


steep slope before they step off a sheer cliff. And in each of these sports the watchful eyes of an expert instructor study each move the novice makes. Now consider the training that most people get before taking up more ordinary sports: self-taught hunters march into the woods knowing little more than which end of their firearm to point at the target; vacationers jump into rented outboards knowing nothing about water right-of-way rules or what to do when a boat capsizes; the motorcyclist who is barely competent at street riding races onto backcountry trails without so much as a word of instruction.

Physical conditioning is also a vital part of the training of many high-risk athletes, and the lack of it is a source of mayhem among participants in 'low-risk' sports. Diane Cooke of the Maryland Safety Council points out that every summer people rush outdoors "to use everything that got flabby over the winter." They become "weekend warriors" who sit at a desk or workbench five days a week and then, with no more preparation than a few deep knee bends, seek out rocks to climb, hills to jog, lakes to swim. In winter, with equal enthusiasm and as little preparation, they strap on their skis and slide to possible destruction.

The result is a staggering toll of deaths and injuries. According to Earl Smith of the Maryland Safety Council, 1,321 people were killed in boating accidents in 1978, the last year for which national figures are available, and another 2,600 lost their lives while swimming. In the same year, there were 107,000 snow skiing injuries, and in 1976 snowmobiling resulted in 18,000 injuries.

Make no mistake: I am not suggesting that the more exciting sports are no more dangerous than the less exciting ones, that a person may as well jump out of an airplane as jog around the block. What I am suggesting is that ordinary 'safe' sports can be as deadly as any game in town if we pursue them without being physically fit, without being adequately trained, or without having a healthy regard for the potential hazards. Some people who would not jump out of an airplane at gunpoint take chances while swimming or snowmobiling that would make the average skydiver blanch. Those who deliberately seek out the excitement of high risk sports are not, after all, the only ones who live dangerously. WE



Products on Display

Photos by Roger Howard

An attractive showcase for network distribution products

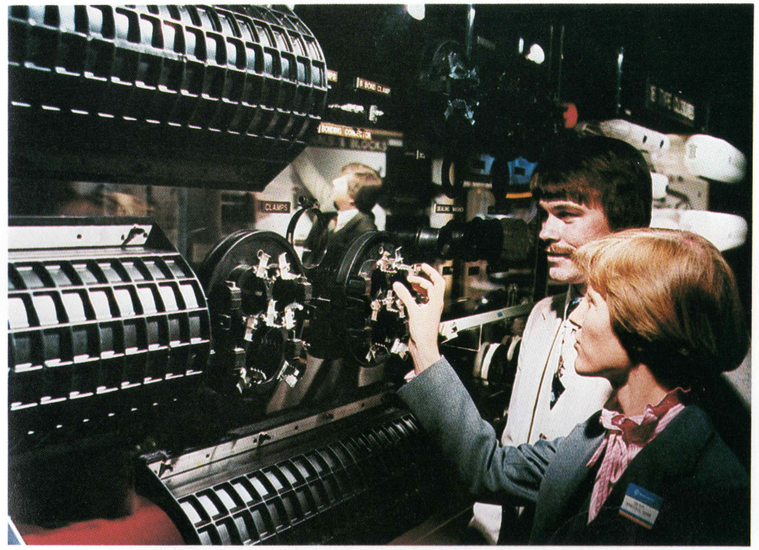
Product display centers are usually designed with the customer in mind. At Western Electric, these centers have become an integral part of marketing and promoting products because they provide a convenient, comfortable setting for demonstrations and exhibits. In particular, they are effective for presenting components and hardware like the connectors, cabinets, and apparatus manufactured for the cable and wire products division at the plant in Omaha.

At Omaha, however, there's an added dimension that takes the E. M. Britt Product Display Center beyond marketing, beyond the customer, and into a different kind of promotion—promotion of better employee relations.

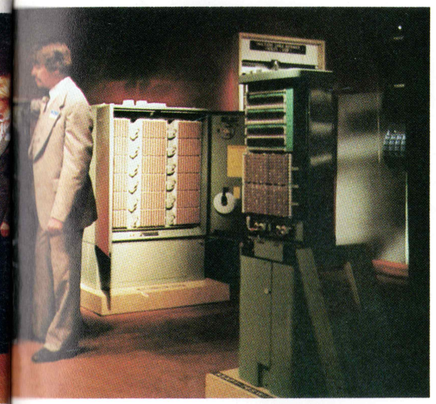
The Omaha product center began as a display table in a corner of the factory in 1974. At that time, the Omaha Works was being converted to make network distribution apparatus as well as cable and wire. The modest exhibit was set up to allay employee anxiety about their jobs. The "table in the corner" displayed loop transmission apparatus (LTA) in anticipation of Omaha's new product line.

The area set aside for the product display began to grow as more products were brought in. Along with the growing exhibit, a short slide show was produced by the Works' Public Relations Department entitled "Omaha Works for You." The display evolved at Omaha during Western's transition into the competitive environment which is characterized by marketing strategies composed of product promotion, account teams, competitive pricing strategies, and publicized quality control.

Tom Bowman, Network Distribution Products Liaison at the Omaha Works, recalled, "One day, an Omaha-based Account Team Representative asked if he could bring a customer through the display area . . . and I knew we were off and running."



Left: Tom Bowman (right) describes a field splicing tool while Mike Antoniak (seated) of Northwestern Bell demonstrates for his colleagues. Above: Tom Malicoat and Loree Bykerk of Northwestern Bell discuss a closure for splicing materials. Below: Art Meier (kneeling) of the Omaha Works explains features of a feeder distribution interface cabinet.



The display area was indeed a success, so in 1978 Warren G. Corgan, former General Manager at Omaha, now Vice President, Government Sales, decided to move it out of the factory and to build a facility that would really show off the network distribution products.

The new Product Display Center was completed February 8, 1979 and was dedicated to Edgar M. Britt, who was then retiring as General Manager of Atlanta's Cable and Wire Product Line Planning and Management. Bowman explained, "Mr. Britt played a major role in the planning and the negotiations that initially put Omaha in the LTA—now called the network distribution apparatus — business. Many people helped to create this facility, one of the first of its kind at a works location."

The new center has its own entrance, an anteroom with a working Design Line* telephone display, the main display with audio/visual capability for slide and film presentations, and numerous hands-on displays of products that represent the entire Western Electric cable and wire products division's line.

Account Management teams use the center to meet with executives as well as technical personnel from the Bell Operating Companies. Network items are "big ticket" purchases, and their increased sales more than make up for the cost of the Product Display Center.

Another part of the program for customers is a tour of the Works. Customers are encouraged to talk to the employees on the floor about the product line as well as about the jobs themselves. The response from the company's employees is tremendous. According to Bowman, "They treat the visitors like long-lost cousins, telling them what they do, the importance of their production rate, and high Western standards. It impresses the customer and boosts the morale of the people here at the Works."

The employees at the Omaha Works are eager to talk about their jobs and how their product fits into the network. They can do so as a result of Omaha's plant-wide program designed to bring employees, regardless of rank or length of service, through the Product Display Center. Layout Operator Arlo Nielsen said of the display, "We have become more informed about what our jobs really are because we have seen all the related parts. We know how our tools work, but in the center, we see the interrelation of our jobs with other jobs."

In 1979, just about all hourly network distribution apparatus employees from all three shifts toured the center. In the hands-on exhibits, employees are shown Omaha's products, how each one fits into the network, and how the apparatus is joined with other pieces to form the network for the country's telephone service. The education and instruction often includes samples of items manufactured by competitors to emphasize the importance of maintaining high quality and productivity standards —in order to maintain our customers. On several occasions Western's Account Management Representatives, Nielsen, and other Omaha Works employees have used the center for conferences with customers to get feedback on Omaha's products. Nielsen said, "We can satisfy customers better using this approach. The customer will feel better, and the Western employee will be more content if someone listens, takes feedback, and tries to solve the problems." WE

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