WE

JULY-AUGUST 1981

What's New

Assembly Operator Dorothy Weeks displays the circular electronically switched dial in the clean room where the switch pad is assembled.

What's new are the circular electronically switched dials being made at the Shreveport Works for the Candlestick‡ and the Celebrity® telephones. They have a distinctive new look and feel, and even part of the process for making them is completely new.

The unusual dial was designed for customers who want the convenience of Touch-Tone® dialing in Design Line* decorator phones that require a round dial.

Instead of the half centimeter of movement needed to activate the current Touch-Tone* telephone dials, buttons on the new dials produce a positive tactile, as well as an audible, click. The buttons on the face of the dial rest on concave disks inside the dial. Pressing down on one of the buttons temporarily flattens one of the concave disks like a child's metal cricket, and a clicking noise is produced when the metal disk snaps back.

The heart of the new dial's mechanism is the contact between the click-disk and the base of the switch pad. The switch pad is assembled in a superclean environment so that it is effectively sealed from future contamination.

In the clean room at Shreveport, employees like assembly operators Dorothy Weeks and Mary Jackson arrange 12 disks of gold-plated stainless steel in a circle on the contact points of the base of the switch pad. A layer of yellow polyester film is placed over the disks and the base. The film holds everything in place and at the same time seals the switch pad and the contact points.

The sealed switch pad can then be taken from the clean room to the production line where it is incorporated in the dial and tested for electronic accuracy. WE

‡Registered Trademark of American Telecommunications Corporation
*Trademark of AT&T

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33rd Year

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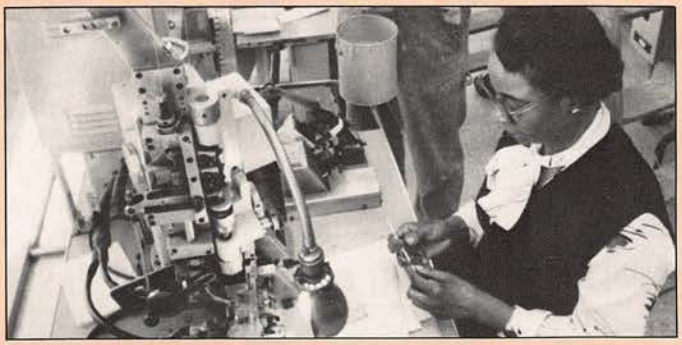

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Western Electric

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ON THE COVER: Work goes on below even as construction continues on the mezzanine above at Kearny Works. Frank Ferrando of Plant Engineering holds blueprints. Our cover story begins on page 2. Photo by Joseph Gazdak.

By Saul Fingerman

Photos by Joseph Gazdak

THE NEW

Kearny

What they're doing at Kearny is nothing short of recycling a whole factory

Nightclub singer Sophie Tucker used to open her shows by saying, "I don't get older, I get better"—and a lot of the singer's fans agreed. If the Kearny Works had a voice, it would probably say the same thing, and a lot of people would agree with that, too. For the 56-year-old New Jersey plant is undergoing a remarkable transformation in the process of being modernized.

Actually, Kearny does have a voice, and an articulate one at that. It is the voice of Ron Butterfield, its general manager and the driving force behind Kearny's dramatic modernization program.

Butterfield came to Kearny in October 1979 after seven years as general manager of the Shreveport Works. He's an electrical engineer, a Sloan Fellow and a man with a mission. That mission is to make Kearny as efficient and modern in its operation as any of its post World War II siblings.

"Our modernization program," he says, "is probably the most ambitious ever undertaken at a Western Electric location in so short a period of time. We don't have a major building here that isn't undergoing some kind of major change."

Butterfield's enthusiasm is electric and, as most of Kearny's employees will attest, infectious. "What we're doing," he says, sweeping the air with both hands to encompass all of Kearny, "is recycling a whole factory. When we're through, we'll be as effective as plants built within the last 10 to 20 years."

The massive "recycling" is necessary because Kearny has been gradually losing its competitive position in a competitive world. Age, size and changing times have all worked against our second oldest and second largest plant.

Opened for operation in 1925, Kearny is a sprawling complex of more than 30 buildings scattered over 150 acres on the east bank of the Passaic River. Because the land was marshy, the entire tract is built on pilings. At its peak, it had 3.6 million square feet of floor space plus a number of satellite shops, of which only the Clark shop remains. "We were," says Butterfield, "a very large mother ship for satellite ships all over the place. In fact, Kearny was so large, I kept meeting 40-year veterans at our service anniversary luncheons who had never before met each other."

In its time, Kearny has built just about every part of the telephone plant. It has made switchboards, crossbar, carrier, wire, cable and thousands of items long since out of production.

As electronic switching systems came into being, the manufacture of most such newly designed products was assigned to other, newer factories. Kearny was left with a lot of scattered "light density" work in its shops and a number of aging, multi-story buildings that just don't lend themselves to modern manufacturing techniques.

Two buildings in particular typified Kearny's hardening of the arteries. Both are enormous, and

both are clearly from another age. One of these is the "TA" building —for Telephone Apparatus.

From the outside, the TA building looks like a single structure, but it is actually a collection of 11 different buildings, all of which were added as needed over the years. The other is the Ford building—so called, because it was purchased from the Ford Motor Company in 1931. It was old even then, having been built during World War I for the construction of sub chasers for the U.S. Navy. It is a curiously antique building — a faded crystal palace with walls of steel and time-darkened glass. Like the TA building, its age and its arrangements of operations bred inefficiency. Its multiple stories and subdivided structure made for a lot of what Butterfield calls "nonbase" labor, which translates into expensive movement of materials from shop to shop, through passageways and up and down elevators.

All of this belongs in the past, and that is where Kearny's modernization program is putting it. When the modernization program is completed, the ancient TA and Ford buildings will be gone. Kearny's new size will be a sleek 1.3 million square feet in seven major buildings, including a waste treatment plant. Virtually every office and shop will have been moved. More than 100 employees and 200 outside construction workers are working on this multi-million dollar project.

Fittingly enough, the new Kearny Works is making a host of new products. Here, General Manager Ron Butterfield animatedly describes one of them to visitors as Stanley Stafa concentrates on his testing operations.

Very little of this transformation is cosmetic. The changes are keyed to Kearny's output and its future. Even some processes and products are new. For example, Kearny's paint shops, which are vital to its metals operations, have new automatic equipment for both wet and powder painting, and 55 new products were added to the plant's product line in 1980.

Attitudes are changing, too. Butterfield expects a scaled-down, streamlined Kearny will significantly alter a lot of people's perception of the place and their relationship to it. "The old Kearny was so big," he says, "it was difficult for employees to identify with it. We want them to think of Kearny as '*my* Kearny.' I want everyone to take pride in this place.

"The key word for the future," he says, "is consolidation, at Kearny and elsewhere in Western Electric. It eliminates redundancy of engineering and of other precious manufacturing resources." He is referring to consolidation of product lines.

"We have identified three businesses here at Kearny," he says. "The first is energy systems, which is 60 percent of our total activity. The second is apparatus, which is 28 percent and includes things like connectors, plugs, jacks and minirelays. And the third is our metals business, which is 12 percent of our activity.

"Prior to becoming a three-business operation, Kearny was a conglomeration of shops. Now, we have a sharper focus as to what we have to do to make and keep Kearny healthy. It allows us to make critical analyses. It tells us, for example, that we have an under-utilized metalworking business, so we can do metalwork for other Western Electric locations. Most of all, it lets us concentrate on those three businesses and slim down accordingly. As I like to put it, under our modernization program, Kearny went into 'drydock'

as an obsolete World War II battleship and is coming out as a missile-firing light cruiser."

The transformation from old battlewagon to sleek cruiser required some very creative thinking on the part of Butterfield's staff, Kearny's several engineering groups and a number of Plant Design and Construction people. They had to vacate some large buildings and yet, somehow, create more space for the operations coming out of those buildings. What's more, they had to do it without erecting new buildings, and they had to do it without interrupting operations. Kearny is a feeder plant for many Western Electric locations; interrupting its output could have played havoc throughout the company.

It was done by some innovative use of available floor space. Buildings, Butterfield reasoned, have height as well as horizontal area. In short, they have a third dimension. "Using the cube more effectively," Butterfield calls it. In practice, it meant using the vertical dimension of existing buildings by constructing mezzanines (going up) and by refitting a previously unused basement (going down).

The mezzanines were built into a former merchandising warehouse that had been erected in the sixties. Eighty feet wide and supported by 12-foot high steel columns, the mezzanines overhang shop areas like an enormous concrete ribbon running along all of one wall and most of another. They add a precious 90,000 square feet that will be used for office space and a cafeteria. That former merchandising warehouse is now the Energy Systems Manufacturing Complex, and the mezzanine offices will be occupied by engineers and other management personnel directly associated with the energy systems product shops. These shops manufacture a wide range of vital power units that provide electrical energy to drive virtually every kind of Western Electric communications system.

While Kearny's modernization went upward for space on the mezzanines in the Energy Systems Complex, it went downward for space in the lower level of the Administration Complex. This is a low-profile office building put up in the sixties over what was once a goldfish pond. The pond and its finny residents are a story unto themselves. In brief, what happened is that the original foundation was installed during the mid-1920's to support an eight-story building. Then, the high-rise structure was delayed and ultimately cancelled while still on the drawing board because it was becoming clear even then that multistory buildings don't lend themselves to efficient manufacture.

The foundation slowly filled with water and then the fish were added to protect it from deterioration. The fish became famous in 1961 when the Administration Complex was about to go up and Kearny's people had to find homes for thousands of very large goldfish. Thanks to a lot of media coverage, homes were found for the fish, which were shipped all over the country in water-filled bags.

When Butterfield came to Kearny, the Administration Complex's lower level was being used only to house old files and other dust collectors. Now, it is well on its way to becoming an ultramodern office and computer systems complex that will house Kearny's Power PECC organization as well as information systems, and other engineering and administrative people.

The Administration Complex will also house a Forum Room, which will serve double duty. "It's an excellent facility for organizational meetings, and, as Kearny has its own Product Line Planning and Management group, they will need a place to take their customers," says Butterfield. "That place will be the Forum Room." The furnishings came from the Denver Forum — flooring, audio/visual gear, chairs and all. "We bought the whole shooting match," says Butterfield, "everything but the walls."

All in all, it's been quite a job. According to Pete Wolchok and Jack Syms of PD&C, much of the modernization work has been routine, but some has been anything but. For example, using a giant crane to swing 20-ton structural

Above—Hagar Harris keeps working while Albert Matto paints the equipment. Left—This happy bunch of paraders smiles for the camera. The slogan on the drum says it all. Right—Part of Kearny's modernization included new transporters. Here, dispatcher George Annette checks records.

steel beams through the narrow windows of the Apparatus Complex to support air conditioning units wasn't routine by anybody's standards. "And neither was putting up mezzanines over functioning shops," adds Frank Ferrando of Kearny's Plant Engineering Department.

Wolchok and Syms have been coordinating the work of outside contractors since the modernization program began. "We make sure it's being done on time and according to specs—which isn't easy considering that we're working on six buildings at the same time, and they're all occupied.'"

Ferrando is quick to agree. "Coordinating all this work without ever shutting down operations anywhere is a tremendous accomplishment," he says. "We didn't lose a single day—all the potentially disruptive work was done on weekends, holidays, during plant-shutdowns and at night."

Moving Kearny's employees and their jobs without halting production was akin to playing musical chairs with 5,000 people. It was done largely by putting people in temporary "holding" quarters and by piecemeal moves. Herman Piraneo, in charge of expense control, says he never saw anything like it in his 32 years at Kearny. "We moved 10 people at a time," he says. "We moved their work at night, and, when they started the next morning, it was like they never moved."

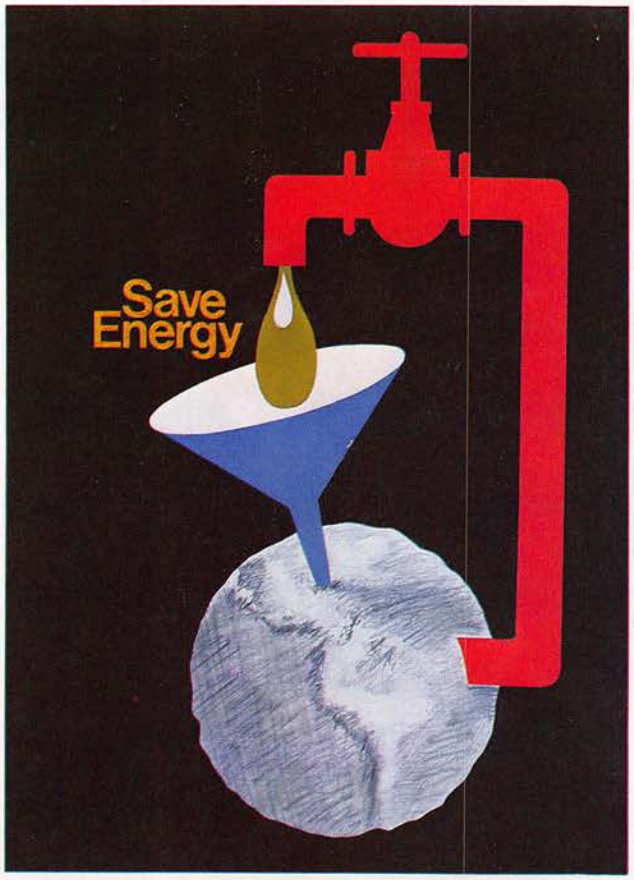
Piraneo is happy about the changes. "It's fantastic! Now, we have nice accommodations, nice lighting and air conditioning. And the new shop arrangement makes for a good even flow of work." Asked if production efficiency had gone up, he said, "Absolutely!"

Al Cerino, president of the IBEW local union, shares Piraneo's enthusiasm. "I feel wonderful about modernization," he says. "I worked 25 years in a building which is now called the Energy Systems Complex, and, when I go through it now, I can't believe it. Modernization is a godsend to us, and we encourage our people to help all they can."

Community reaction has been equally positive. One local TV station made a one-hour videotape about the changes at Kearny and aired it *four times*. Butterfield says the station was so impressed because Kearny hadn't shut down and moved out of the state like some other industries. He says, "The thing that excites people is that our modernization can be the beginning of a rebirth for the entire industrial area surrounding the works. Our efforts say, 'This is a business that has decided to stay and not go elsewhere.' "

But, for all the community excitement, the real impact of modernization has been internal. There's a new spirit at Kearny and it was vividly expressed last July in an outburst of pride and enthusiasm that would have delighted Knute Rockne. To show how they felt about the way things were going, thousands of employees decked themselves out in homemade costumes and held a lunchtime parade to honor the passing of the old and the coming of the new. It was an afternoon of hot dogs, music, cheering and pride in a reborn Kearny Works. WE

ADULT CATEGORY

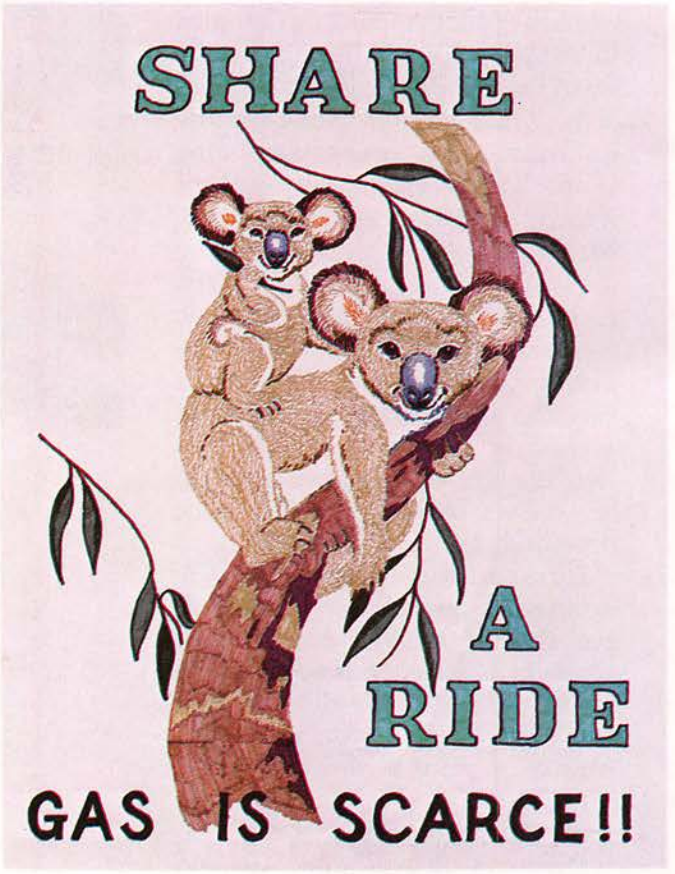


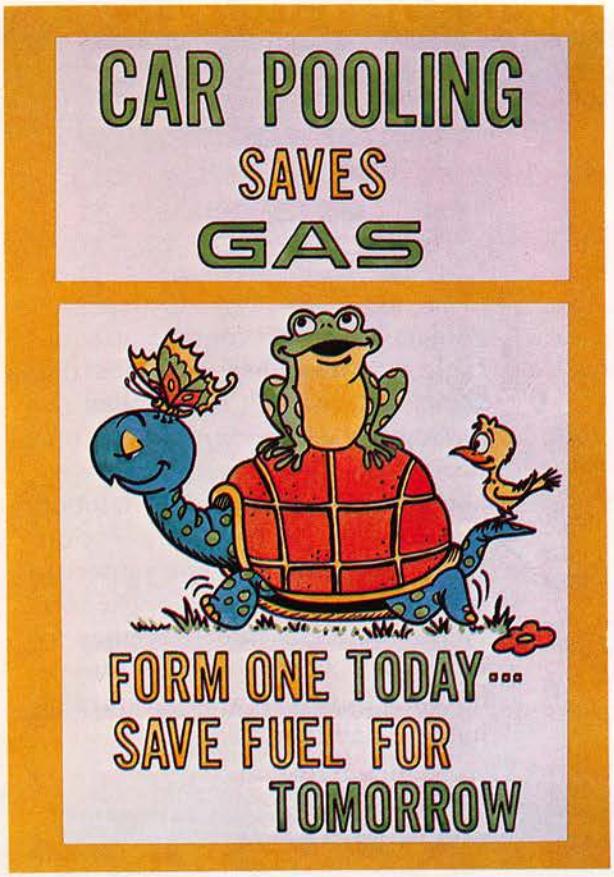
1st Place Peter Lewis
Public Relations
Corporate Headquarters

The Winners

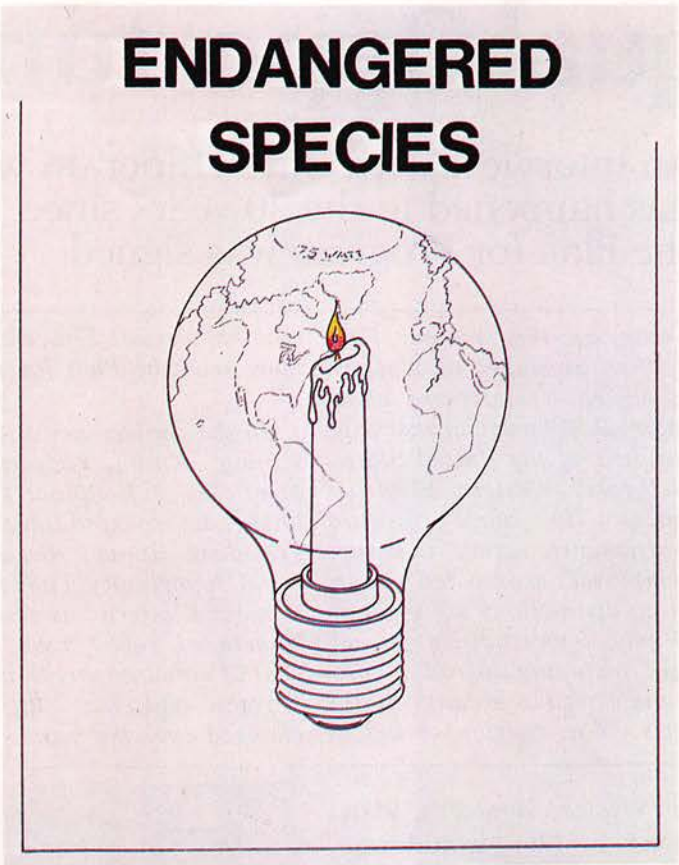
When the Energy Management Department at Headquarters decided to have a poster idea contest a few months ago, they didn't realize the hardest part would be the judging. An impressive 140 posters came in from 28 WE locations, and *all* of them were good.

The judges, Sue Fleming Jederlinic, Arthur F. Winstanley and Dewey A. Heggie knew they were licked before they started. Most of the posters looked like winners, and they could pick only six. It took them hours and hours, but they finally agreed to agree on the winners. Here they are—six of the best.



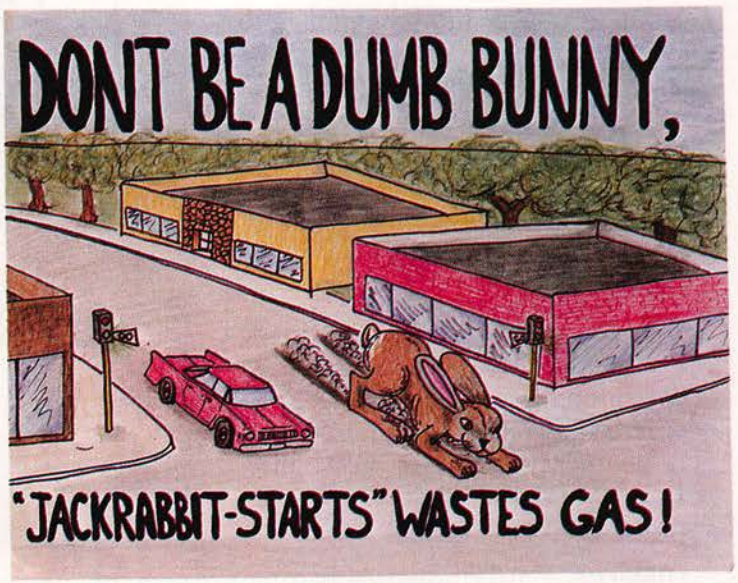


2nd Place Kenneth Quire
Reading Works



3rd Place Jim Mahler
Engineering Research Center

2nd Place Pamela Carden, Age 16
(Parent: Karen Carden)
PPI—Los Angeles



3rd Place Robert Topolewski, Age 15
(Parent:T.H.Topolewski)
Phoenix Works

CHILDREN'S CATEGORY

1st Place ← Jackie Topolewski, Age 17
(Parent:T.H.Topolewski)
Phoenix Works

Equal Opportunity

An interview with Dave Hilder on what has happened in the 20 years since the Plan for Progress was signed

Twenty years ago this summer, H. I. Romnes, then president of Western Electric, signed a statement along with Lyndon B. Johnson, at that time Vice President of the United States, which set forth Western Electric's commitment "to move forward through affirmative action" to ensure that all employees are treated equally and that no distinctions are made in rates of pay, opportunities for advancement, including upgrading, promotion and transfer because of the employee's color, religious belief or national origin. The statement was known as the Plan for Progress.

On the anniversary of that historic signing, Kathy Fitzgerald, department chief in headquarters public relations, interviewed Dave Hilder, Vice President, Human Resources, about equal opportunity. They talked about how far Western has come along the sometimes rocky road toward the goal of equal opportunity for all employees and how attitudes have changed over the years.

WE: When Western signed the Plan for Progress in 1961, would you say this put us in the forefront of industry in addressing the issue of equal employment opportunity?

Hilder: I certainly would. We were among the very first companies to publicly declare, by signing the Plan, that we would take affirmative action to guarantee equality in employment opportunity. A year later, the total number of companies who had come on board was still only about 85—in the whole country.

WE: Looking at the 1961 Plan for Progress, it talks about eliminating discrimination based on race, color, creed and national origin. There is no mention of sex discrimination. When was that first recognized as a factor?

Hilder: Sex discrimination was declared illegal by Title VII of the Civil Rights Act of 1964. Then, in 1967, President Johnson signed an Executive Order which added sex as a factor in the elimination of discrimination for federal contractors and subcontractors, of which Western is one. It's hard to believe today, with our heightened awareness of women's rights, that it wasn't included from the start. But, in 1961, the government was focusing on racial and religious discrimination, and that's how the original agreements were framed.

WE President H. I. Romnes signing Plan for Progress in Washington in 1961. Looking on are U.S. Vice President Lyndon B. Johnson and Labor Secretary Arthur Goldberg.

WE: Has the concept of equal employment opportunity changed much since 1961?

Hilder: The basic concept of equitable treatment has remained the same. But, in 1973, we stopped referring to "equal *employment* opportunity" and starting talking about "equal opportunity." A lot of people seem to have the impression that equal employment opportunity applied only to hiring. The fact of the matter is that it applies to many areas, including promotions, laterals, transfers, upgrades, training and pay treatment.

WE: How did we define "affirmative action" in 1961? Has the definition changed over the years?

Hilder: The definition of "affirmative action" is the same today as it was in 1961:—seek out the certain segments of the population that have been systematically excluded from a fair chance and full participation in our society; encourage them and assist them to attain a position where they can have an equal opportunity. In other words, special efforts must be undertaken to see that minorities and women are employed and advanced in employment so as to overcome effects of past societal discrimination. In recent years, affirmative action has been expanded to include handicapped persons, the disabled and Vietnam veterans.

WE: Does Western have to meet any numerical quotas—such as promote 50 women to section chiefs in 1981—to fulfill our affirmative action requirements?

Hilder: No. We are not required to use numerical quotas in fulfilling our affirmative action requirements. Quotas in employment situations are ordered by the courts. Goals are voluntary. At Western, we do have certain affirmative action goals. Under current procedures, each Company location is required to prepare an annual Affirmative Action Compliance Program that includes goals in each job category where the percentage of minorities or women is not equal to their availability. The goals that are established must be reasonable and attainable, and the expectation is that through a "good faith effort" these goals will be achieved.

WE: What groups at Western fall into the equal opportunity area?

Hilder: Equal opportunity covers all groups of people — males, females, blacks, whites, American Indians, or Alaskan Natives, Hispanics, and Asian or Pacific Islanders —all people regardless of age, religion, sex, or national origin. However, if a specific group is considered to be underutilized then specific good faith efforts, in terms of goals and timetables, will be taken for that group to ensure representation consistent with availability.

WE: Nationwide, there is a shortage of female and minority engineers and scientists. What have we done to combat this problem?

"We stopped referring to 'equal *employment* opportunity' and started talking about 'equal opportunity' "

Hilder: We've recognized for some years that our efforts to hire more blacks and females for higher level technical and professional jobs have been hampered by the disproportionately low number of black and female engineers and scientists.

To help the situation, WE supports scholarship programs, contributes to the United Negro College Fund, and sponsors summer internship programs for minority and female youths that hopefully will result in their pursuing science and other professional careers.

The Western Electric Fund has assisted a number of black engineering colleges to gain professional accreditation, which has helped increase the number of qualified minority engineering students available for employment. Our college recruiters schedule recruiting visits at all of the accredited minority engineering colleges. And we advertise heavily in minority and women student publications.

We have developed and use displays and exhibits especially designed to attract minority and female engineering students. We support minority engineering colleges through participation in the National Alliance of Business "Cluster" program, and we have participated in minority job fairs and other special functions such as the Society of Women Engineers Annual Awards Banquet.

As a company, we have participated in other programs designed to promote engineering education for minorities such as the Minority Introduction to Technical Education (MITE) Program and the Graduate Engineering for Minorities (GEM) Program.

In house, we've developed filmstrips and motion pictures designed to interest greater numbers of minority and female students in technical education.

WE: As a company, where do we stand in relation to our affirmative action goals?

Hilder: Each location, in its annual Affirmative Action Compliance Plan, determines the number of opportunities that will occur during

"...statistics show that we have made progress since 1961 in providing equal opportunity"

the year and then sets goals for each underutilized subcategory. Most locations have good success in achieving or surpassing their goals because of the good faith efforts put forth in recruiting and advertising.

We continue to make progress toward eliminating underutilization. As a matter of fact in the area of minority supervisors through manager level and professionals for the total Company, we have met our current goals in all areas but the manager level. Significant strides have also been made regarding utilization of female supervisors and professionals. In 1961, we had fewer than 2 percent women in the supervisory and professional ranks. At the start of 1981, that number had risen to slightly higher than 12½ percent.

WE: Is it possible that our affirmative action programs have led to reverse discrimination vis-a-vis white males?

Hilder: No. In fact, if you look at the data, in 1980, two out of every three promotions to supervision went to white males. The Company is careful to assure that its affirmative action does not result in unlawful discrimination against any group. As you may know, there has been considerable litigation involving "reverse discrimination." The Supreme Court has defined the appropriate scope of affirmative action for private employers, and the Company's affirmative action program complies with the Supreme Court's standards.

WE: In view of the fact that two out of three supervisory promotions went to white males, why do you think so many men feel there is reverse discrimination?

Hilder: I think publicity is partly to blame. As our goals are achieved, minorities and women who enter our work force become highly visible. In addition, government agencies, newspapers, the courts, as well as minority and feminist groups have all emphasized the urgency to achieve racial and sexual equality in employment, as well as in all other segments of society, such as housing, etc.

To the white male, this may appear to be at least a threat and possibly reverse discrimination. It does, at the very least, increase competition for promotions.

"Most locations have good success in achieving or surpassing their goals because of the good faith efforts put forth in recruiting and advertising"

But I must say I think more white males have come to accept the value—or at least the reality—of equal opportunity regulations. And as time goes by, EO will simply be a fact of life. But when the Plan for Progress was signed in 1961, we knew it would be a long undertaking to ensure equal opportunity and gain acceptance for it.

WE: The issue of sexual harassment is very much in the news today. In fact, you sent a letter to all employees expressly forbidding action that could be construed as sexual harassment. What prompted you to write that letter?

Hilder: Preventive medicine. The Equal Employment Opportunity Commission issued its final guidelines regarding sexual harassment, and we wanted to reaffirm the Company's policy on this issue. We felt it was our obligation to go on record to inform all our employees of the details of our policy prohibiting sexual harassment.

WE: Describe some actions that could be construed as sexual harassment?

Hilder: As stated in my letter last August, these include but are not limited to — repeated, offensive sexual flirtations, advances, and/or propositions; continual or repeated verbal abuse of a sexual nature; graphic verbal commentaries about an individual's body; sexually degrading words used to describe an individual; and the display in the work place of sexually suggestive objects or pictures.

WE: In 1961, when we first signed the Plan for Progress, the issue of how we treated maternity cases wasn't considered an equal oportunity matter. Now, it is. How has the Company changed its policies to deal with this?

Hilder: The President of the United States signed the Pregnancy Disability Amendment, creating a new law effective April 29, 1979. The law amended Title VII of the Civil Rights Act of 1964 to include in its

definition of sex discrimination any employment decision based solely on pregnancy. The law requires employers to treat pregnant females, nonpregnant females, and males the same for all disability benefits, fringe programs and other employment-related purposes.

The Company's Maternity Payment Plan was in effect before the time Title VII was amended. The Anticipated Disability Program was introduced on April 29, 1979, not only in Western Electric, but at all Bell System companies in keeping with the amendment to the law. The program was designed to ensure equal treatment for all employees in cases of disability, including pregnancy, childbirth and child care.

WE: How would you contrast the laws governing EO in 1961 with today?

Hilder: In 1961, the only laws which might govern EO were the Civil Rights Acts of 1866, 1870, and 1871. Their application to employment was vague and had not been defined by the courts. In fact, none of these laws was applied to the private employment sector until after the passage of Title VII of the Civil Rights Acts of 1964. In addition to these laws, there was an Executive Order signed in 1953 by President Eisenhower, but it had no enforcement power.

After Title VII was passed, laws governing age discrimination in the work place and equal opportunity for handicaped persons were passed, as well as the Equal Pay Act which forbids an employer to pay a woman less than a man for equal work.

So, as you can see the laws in 1981 are much more specific. And they are administered more strenuously by government agencies, like the Equal Opportunity Commission or the Office of Federal Contract Compliance, who further interpret the laws.

WE: How important is the supervisor's role in assuring that the Company's EO policies are carried out?

Hilder: The role of the supervisor is very important. It's the key element in an effective equal opportunity program. There is a paragraph in Mr. Procknow's annual statement on equal opportunity and affirmative action that emphasizes this point. All supervisors are required to become familiar with the AACP at their location and take an active role in suporting its policies and practices.

"You can have the best, most consistent policies in the world, but if all your supervisors don't understand them, you've got a problem"

The effectiveness of supervisors in furthering these policies and practices is one of the factors in their performance appraisals. This is not only a Company requirement, it is also mandated by the implementing rules and regulations published by the Department of Labor.

Each year all supervisors are furnished a copy of their location's affirmative action compliance program and are required to document that they have read and understand the program. You can have the best, most consistent policies in the world, but if all your supervisors don't understand them, you've got a problem.

WE: Could you contrast the work force of 1961, when we first signed the Plan for Progress, with the work force of 1981?

Hilder: The statistics show that we have made progress since 1961 in providing equal opportunity. In 1961, less than 1 percent of our supervisors were minorities and only 2 percent of our supervisors were women compared to 8 percent and 10 percent respectively in 1981. In the professional ranks, only 1 percent were either women or minorities compared to today when 9 percent are minority and 14 percent are female.

We've come a long way, but we've still got a way to go, particularly in the area of female supervisors.

WE: As a business, have we found equal opportunity beneficial?

Hilder: Absolutely. Women and minorities made vital contributions to our business long before EO, but there is no question that their contributions have increased as opportunities for advancement have increased. As people utilize their skills and talents more fully, the Company is bound to benefit more fully. WE

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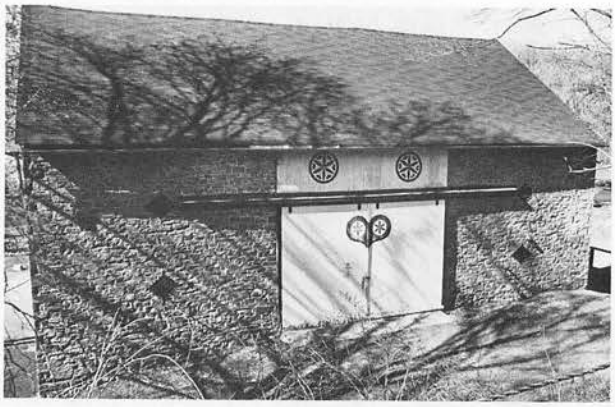
B

C

P



Where Are WE?

The dictionary defines a landmark as any prominent feature of the landscape marking a particular locality. The localities so-marked on these pages are home (or close) to 15 WE installations. Can you tell which? Answers on the opposite page.

O

M

L

N

D

E

A Durell Street of Yesteryear Columbus Works.
B Statue of Will Rogers Oklahoma City Works.
C Stone Mountain Atlanta Works.
D Truman Library Kansas City Works.
E Colonial Williamsburg Richmond Works.
F Water Tower Hawthorne Works.
G Gateway Arch Southwest Region.
H Nassau Hall ERC/CEC.
J Dirigible Hanger Pacific Region.
K Boys Town Omaha Works.
L Old Salem North Carolina Works.
M Holiday Park Indianapolis Works.
N Red Rocks Amphitheater Denver Works.
O Paul Revere's home Merrimack Valley Works.
P Barn with hex marks Allentown Works.

F

G

H

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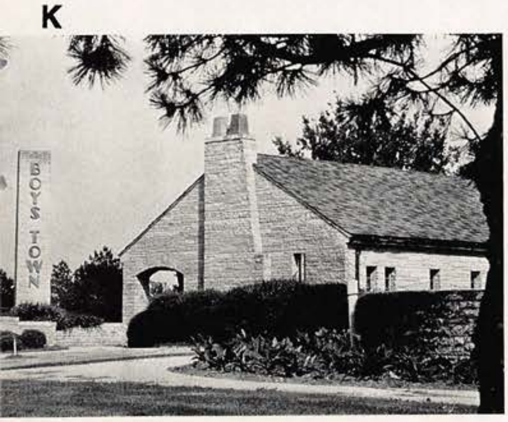


BURLINGTON-
ON THE WAY UP

By George Gray

Photos by Buddy Spoon

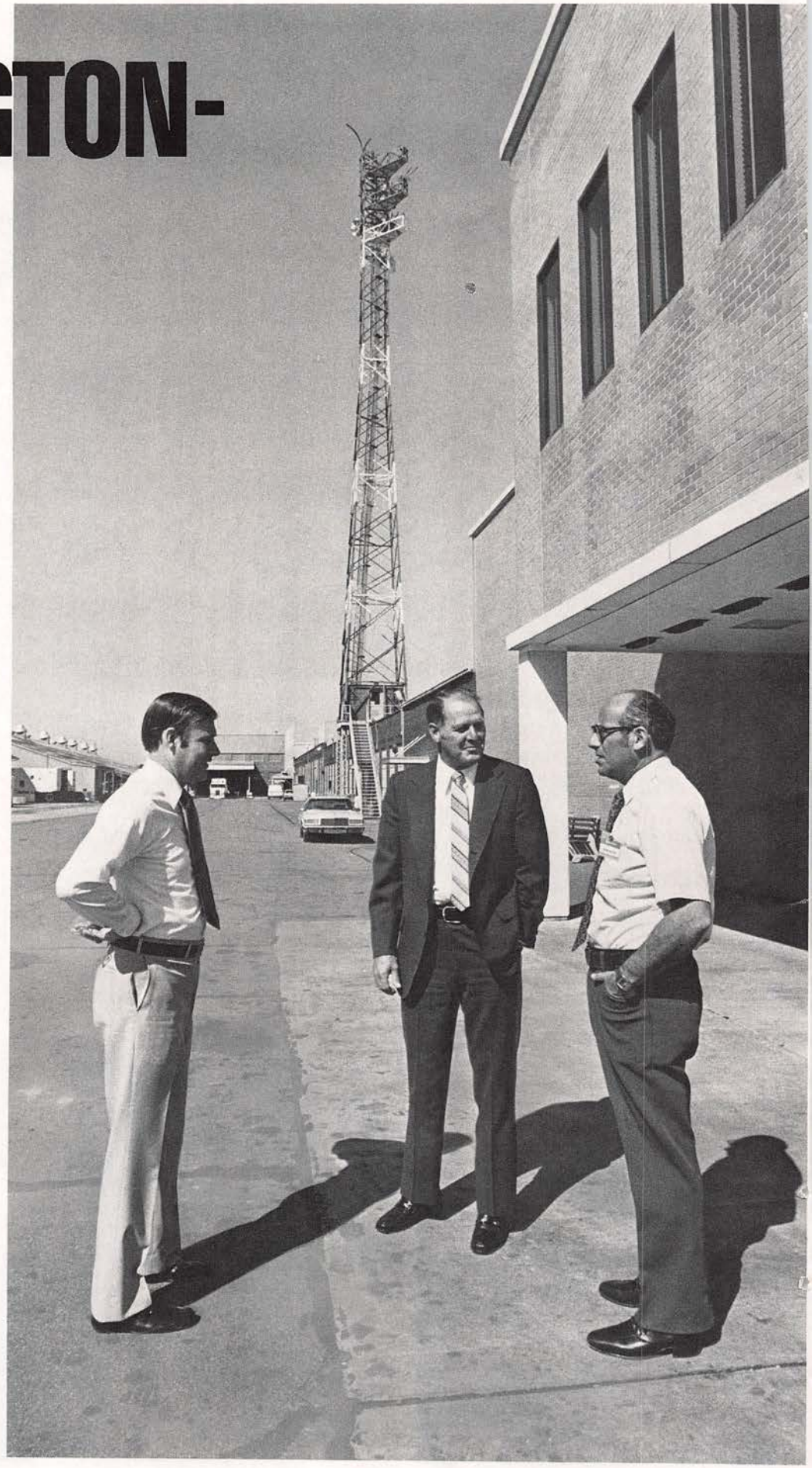
After a long period of near dormancy, Burlington is coming back to life

"The report of my death is an exaggeration," Mark Twain cabled a New York newspaper that had printed his obituary. The American writer had been traveling abroad and had picked up a bug of some kind that laid him low for a while. But it was hardly fatal.

The same thing might be said for the Burlington Shops. In the mid-70s this rather unique facility took a one-two punch that might have doomed a less resilient operation. First, the Safeguard Program, which then made up about 80 percent of its work, was cancelled abruptly. Then the recession hit some of the replacement jobs and remaining government work to cause more cutbacks. Employment fell to about one tenth of what it had been at the peak.

Now, Burlington is bustling again. Government contracts, which are its bread and butter, are coming back to life. Areas of the plant that were closed off several years back are being reopened. In short, the reports of Burlington's demise were an exaggeration.

The fourth oldest of our major manufacturing facilities, Burlington has seldom appeared in the pages of this magazine. The reason is that for most of its 35-year history the products produced there have been electronic gear for the armed forces. Certain pieces of equipment and sometimes entire



projects were classified as defense secrets.

Other WE locations have manufactured defense items (and other employees have needed security clearance), but none so consistently as Burlington. The news is not that those days are past, but rather that they are coming back. On February 1, Burlington was transferred back to Government and Commercial sales after five years in Manufacturing. Greensboro Shops, a sister plant in the heyday of our defense business, had closed in 1976 when all remaining North Carolina government work was consolidated at Burlington and Bell business at Winston-Salem. But now after a long period of near dormancy, Burlington is hiring again.

"We're building up gradually," says plant manager Herb Block. "I might even say we're running short-handed — by design. The worst possible thing would be to get everybody's hopes up — and then have the balloon burst again. We've been there before. This time we're moving cautiously — but we're moving. Reopening Building 16 is an important milestone. I can't ever remember Western shutting down a facility and then opening it up again. But that's exactly what we're doing right now."

What has brought about the renaissance in government work is the same thing that has caused so much change in our traditional Bell lines: solid-state electronics. The missile guidance systems and underwater detection devices that we made in the 50s were like telephone devices of that era—analog systems with vacuum tube amplifiers and soldered-wire circuits.

The life expectancy of the systems at the time they went in was set by military experts at "maybe five years." Technology was changing rapidly and new cold-war strategies seemed to be surfacing every day. Everything seemed to be transitory. It's a good thing that Western people at Burlington did not pay too much attention to those self-proclaimed experts.

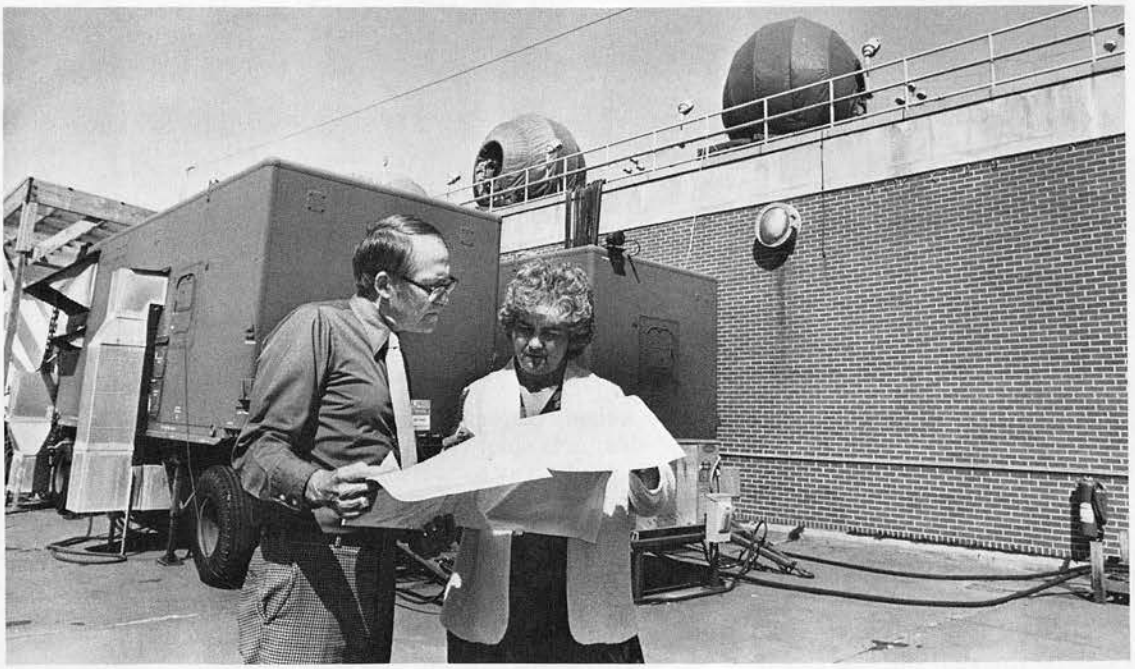
Twenty and thirty years later, the equipment they built is still a prime factor in the nation's defense. Highly touted replacement systems have not been forthcoming. What's happening now is that this equipment which has been on the alert in Europe and Africa and the Far East is coming home to Burlington to be updated from vacuum-tube circuitry to modern digital solid-state versions.

Soldiers' grafitti in many languages get scraped off the khaki-colored vans. Inside and out, everything gets a complete refurbishing. The new solid-state equipment takes up less space so there is more closet room inside. After testing, the vans and antennas will go back to Germany or Korea for perhaps another 25 years.

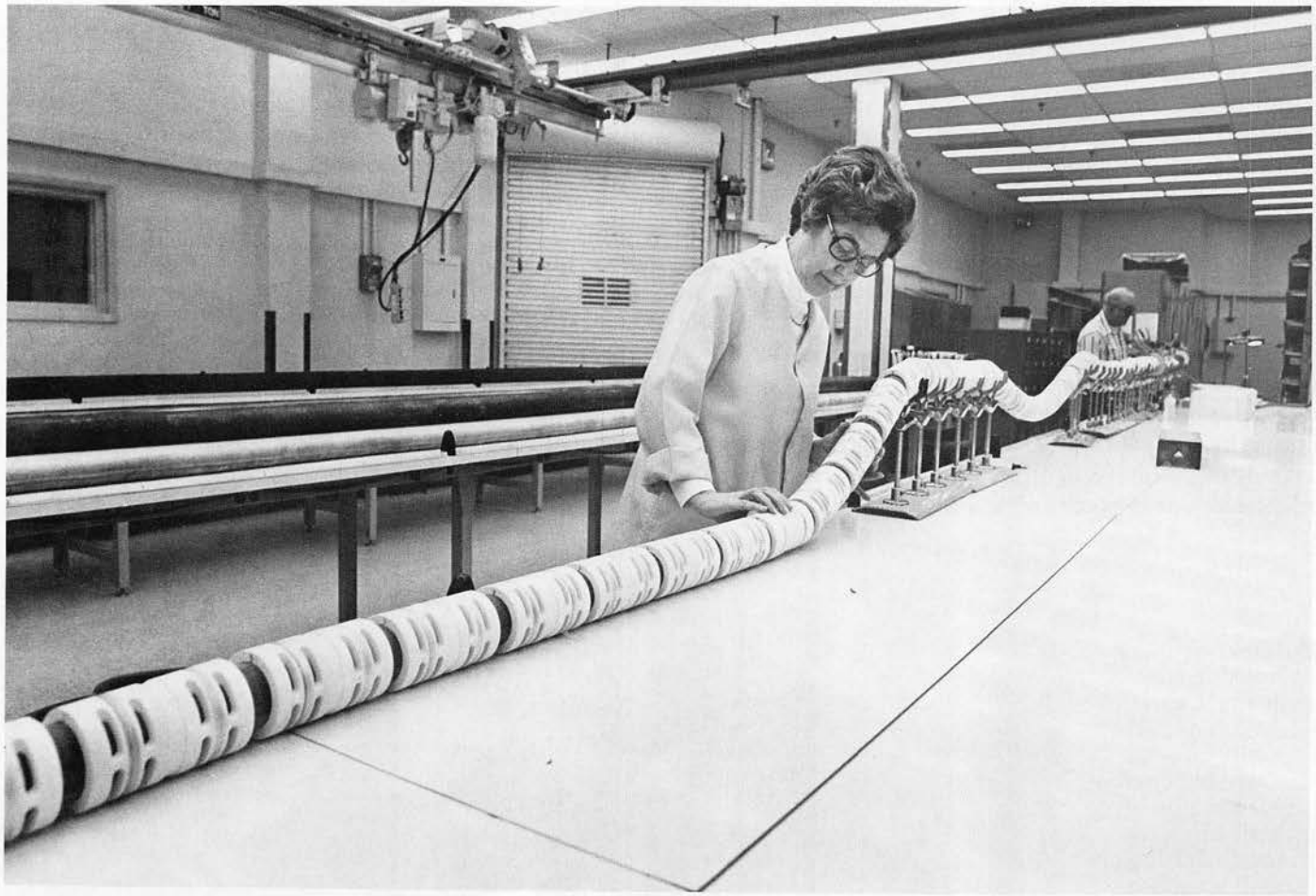
Practically every device made at Burlington has a pedigree. That is, there is a record of who made it, when, who tested it, what batch it came from, etc. Western has always been known for the quality of its Bell products, but applying these tried-and-true standards to "expendable" military equipment is extremely unusual. The military is not used to having equipment last for 20 years—like satellite guidance packages, undersea hydrophones, gun directors and tracking radar for Nike missiles. Attention to quality pays off as the record testifies: 297 consecutive satellite launchings for the U.S. Air Force without a guidance equipment failure; 3-billion component hours on the Caesar project without a component failure.

It's not unusual for an employee to be assigned to refurbish an item that he or she made 20 years ago. The pedigree, which is nowadays more often on tape in a computer, than on a card, tells "who done it."

The work force at Burlington which peaked at 4,279 in June 1960 and bottomed out at 441 in Novem-



Left—Ed Dillberger (dark suit), General Manager, Government and Commercial Sales, chats in the parking lot with Herb Block, Manager Burlington Shops (right) and Ron Eastman, assistant manager. Landmark tower in background is used as a radar target. Right—Atop Nike Test Building engineer Max Ward confers with Millie Faucette, government services coordinator.



ber 1979 is now a little over 600. The present work force averages an extremely long service history. Five out of six have service dates before 1956. About 35 percent have 30 years or more service, which means that they predate the first defense buildup—for Ajax. They go back to the real old days.

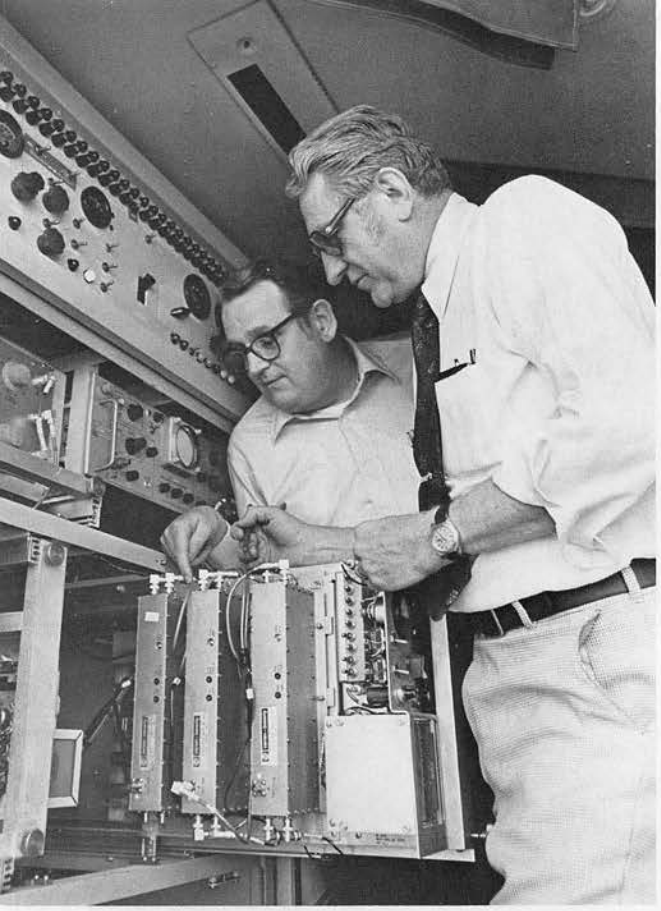
Western first moved into the plant on Graham-Hopedale Road on the northeast side of Burlington in March 1946, and a sister plant opened a month later in Winston-Salem. These North Carolina mills were part of Western's Radio Shops Division, headquartered in those days at 120 Broadway in New York City. Radio Shops had been during the war years virtually synonymous with our supersecret defense work. Western produced more than half of all radar used by the Allies during the war, as well as all sorts of military field communications equipment.

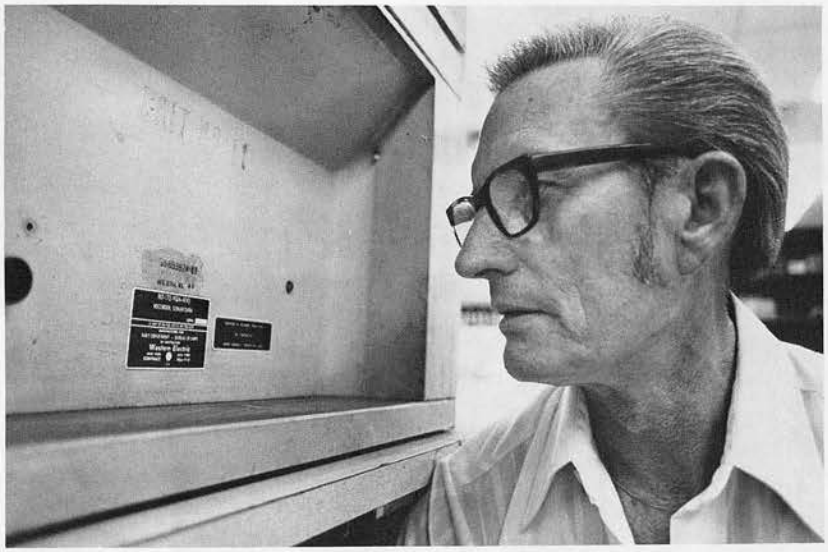
Before the war, we had been the major supplier of sound equipment for radio broadcasting studios and sound motion pictures. The credit line "Sound by Western Electric" still shows up on old movies from that era.

Above—Odessa McDonald inspects shields on hydrophone towed array to prevent shark damage. Right—Onia Loy, inspector in the Caesar clean room.

Burlington phased out studio equipment for radio broadcasting, as well as theater sound systems in the early 50s. This was just about the time the company was casting about for a place to build guidance equipment for Nike Ajax — the nation's main defense system against enemy aircraft. Nike sites appeared almost overnight around major U.S. cities. Less than a decade later, a more sophisticated system, Hercules, superseded Ajax. Still later, we embarked on a third phase — Nike Zeus or Safeguard — a much larger system that detected enemy missiles as well as airplanes.

Burlington had built up its work force for Safeguard production and





Left—In a Nike Hercules van returned for updating, Charley Pugh and engineer Len Dvoracek examine an IF amplifier. Above—Vernon Jones looks over a sonar data recorder, in for modification, that he built 20 years ago at the old Greensboro location.

About 35 percent of our people have 30 years or more service

when the program was cut in 1972, a lot of jobs became surplus. Some government work, particularly underwater sound detection systems for the U.S. Navy, continued. Some telephone jobs were moved in, but they were not jobs requiring the high skills of the remaining people at Burlington. It was a little like using brain surgeons to remove splinters — very expensive. The economic downturn in 1974-75 seemed to be the final blow. But the plant managed to keep going.

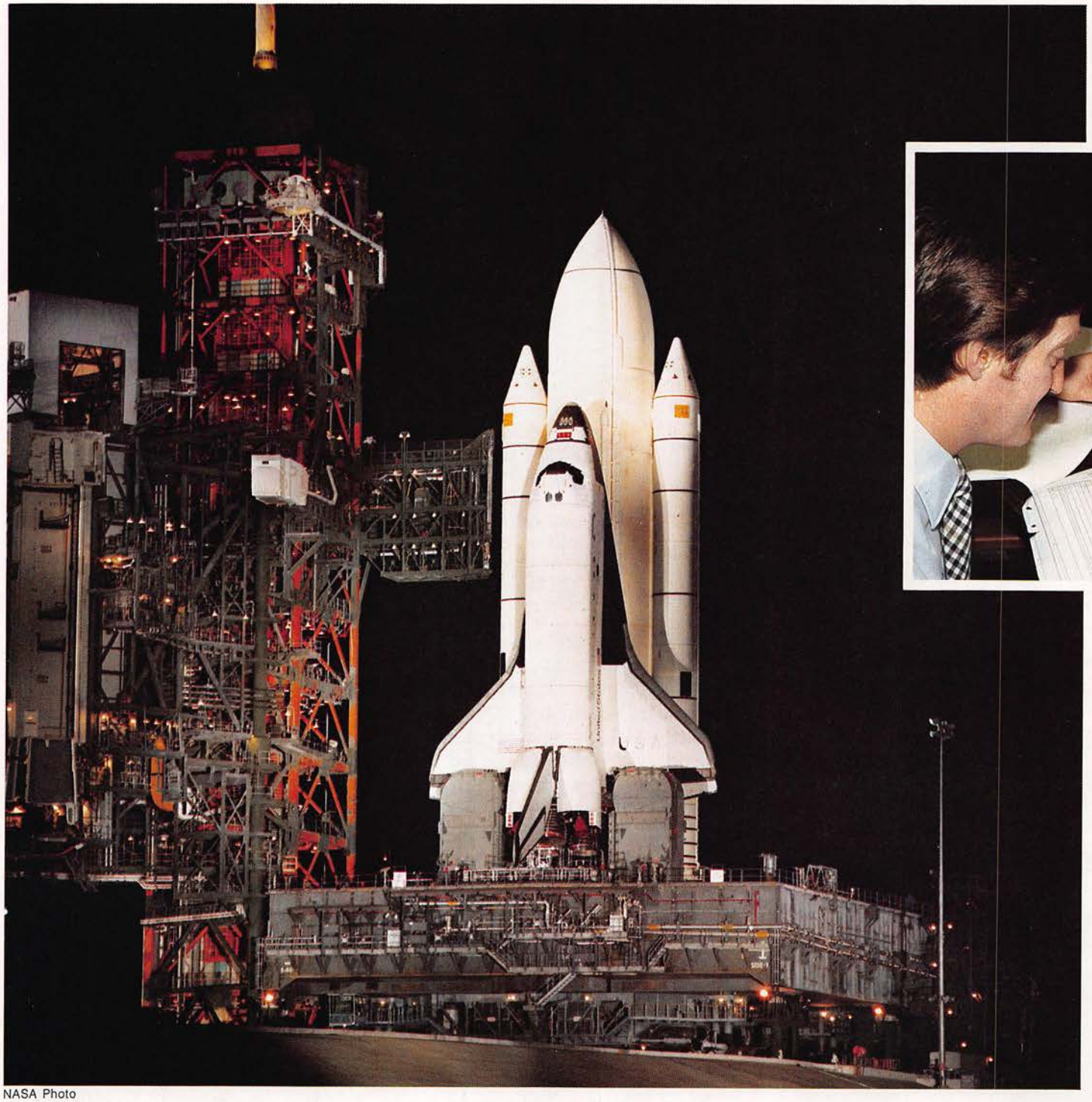
On February 1, 1981 Burlington transferred out of manufacturing and into Government and Commercial Sales — the division that in other times had been known as Radio Shops or Defense Activities. General Manager Ed Dillberger, whose headquarters is Guilford Center, is himself an old Burlington hand. He worked there as an assistant manager and later manager on the Safeguard project in the mid-60s.

Herb Block, the manager of Burlington Shops since June 1979, has had a wide variety of assignments in his 24 years with the company. A New Yorker by birth, he started in equipment engineering and has been in all aspects of that job. His last year before moving to Burlington was spent as Director of Proposal Development for Western Electric International.

Herb is an outgoing type who spends a lot of time in the shops. He knows the great majority of his 608 people by name. He's usually got a smile on his face and he likes to rib fellow golfers, the Pioneers and native Tarheels. And it's contagious. The people at Burlington after some shaky years are beginning to regain their confidence and they look happier too. Another indicator: last year Burlington had 52 percent perfect attendance — possibly a company record.

It's the same old building, but somehow it looks cleaner and shinier than it has for 10 years. Everywhere you turn, there's construction activity. Jobs are being moved to larger quarters, engineering is expanding, the "new" test building, closed down in 1972, is being reopened, the personnel department is interviewing again.

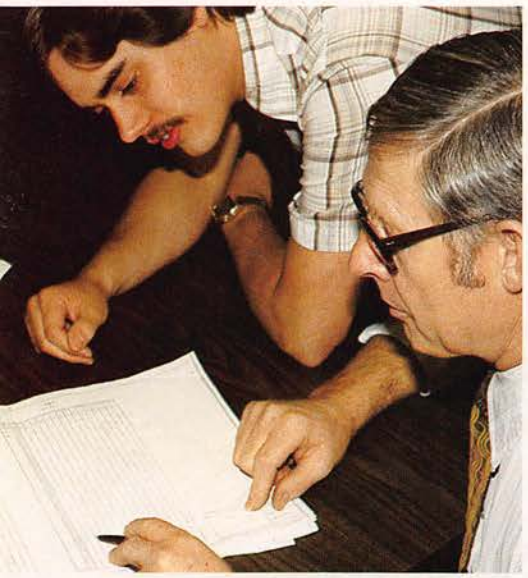
So to paraphrase Mark Twain: Burlington is still a vital part of our business. The report of its demise was premature. WE



NASA Photo

Tuning In on the

Dozens of ground stations were in touch with the Columbia. With this system, you could monitor any of them



Above—(left to right) George Benson, Kevin Wynn and Olin Thibodeaux of the Southwestern Region go over their final plans for the monitoring installation. Left—A towering Columbia awaits blast off for its first orbital test flight at the Kennedy Space Center.

Space Shuttle

By Kit Jenkins

The voices flashed back and forth for last minute preparation. The astronauts were ready, all systems were go. After months of planning, the moment had finally arrived. From Kennedy Space Center, the space shuttle Columbia blasted off for its first orbital test flight on April 12.

At the Johnson Space Center in Houston, communication from ground to air was buzzing. At some 30 stations, technicians meticulously monitored the space shuttle's progress, digesting a flood of electronic data. These conversations, in turn, were instantly available to Houston Mission Control and spacecraft specialists keeping track of each station's operational interchange through equipment engineered and produced by the Southwestern Region.

Western Electric's involvement with the space shuttle's internal monitoring system began last December when Southwestern Bell approached the St. Louis Service Center with basic sketches of what was needed by the National Aeronautics and Space Administration.

"This was not that unusual," notes Olin Thibodeaux, shop section chief. "We do special assembly jobs for the telephone company from time to time."

Regional Special Engineering Services then came aboard to engineer the project. Together, the shop and the engineering group developed a system that would connect all of Mission Control's monitoring stations as they tracked the space shuttle from take off to landing.

"The project didn't involve any radical designs or new equipment," says George Benson, systems equipment engineer who coordinated the unique project. "What we did was take existing stock and modify it to do things never done before. We couldn't just send out for this one."

The system involved nine 30-button Call Director® telephones which allowed Mission Control specialists to listen to operational dialogue from any of the 30 stations in direct communication with the shuttle.

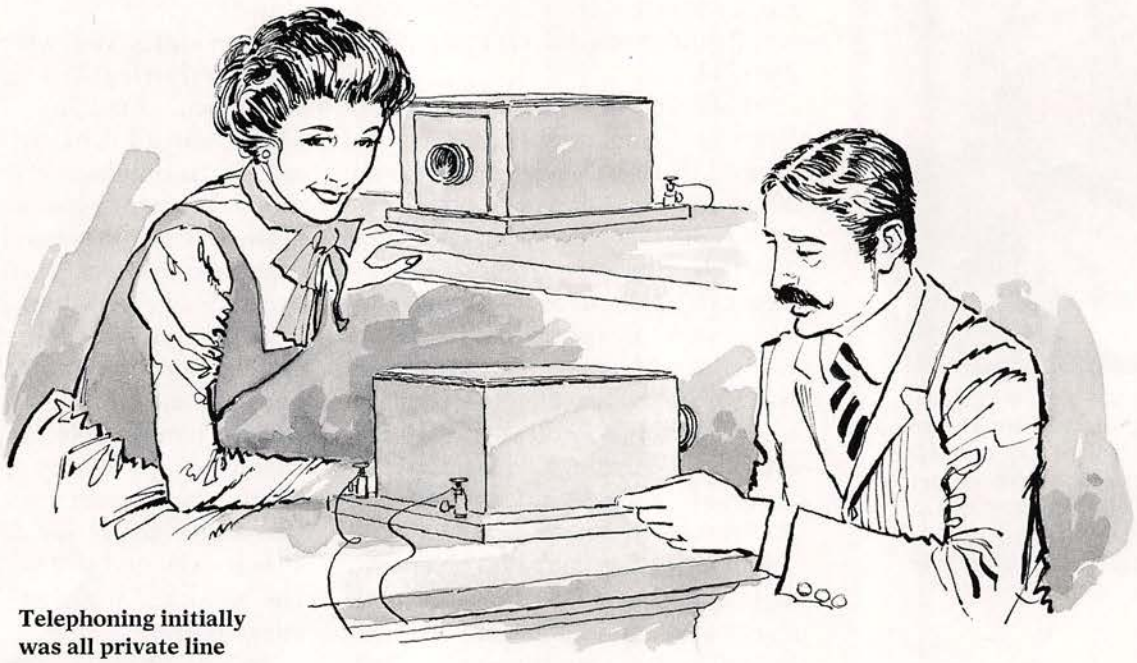
"Previously you were limited to one monitoring key and one conversation," explains Thibodeaux. There was a lot of switching back and forth on channels to keep updated. With this system, it was possible to listen to several stations at once or for several stations to hear one message simultaneously.

Three additional six-button sets offered such unique features as a "newsmedia" button with which reporters could punch up a recording that gave the status of the flight. While the system included a few two-way circuits for conversation, it was designed primarily to tie all the stations together for overall surveillance.

"It was an expansion of communications capability between the command post and the space shuttle. Anybody, such as a high official, for example, who needed access to the information, could tap into it," Thibodeaux adds.

Designing the actual arrangement of circuits in two relay racks of equipment, Special Services Engineering put together the wiring diagrams, picked out power supplies, and determined voltage requirements, among other tasks. Thibodeaux's group, in turn, met the challenge working double shifts to complete work by the January-end deadline.

"We were often only one day ahead of the shop in designing this system," Benson remembers, noting that the entire project was finished in one month. Thanks to close teamwork, Western delivered the monitoring system to Southwestern Bell on February 6. WE

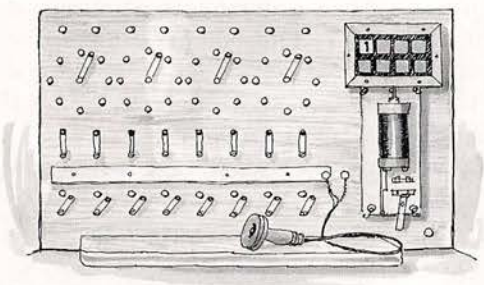


Telephoning initially was all private line

A Switching Primer

Telephone switching systems— how they evolved and what they do

Drawings by Robert Skibo



A very early switchboard

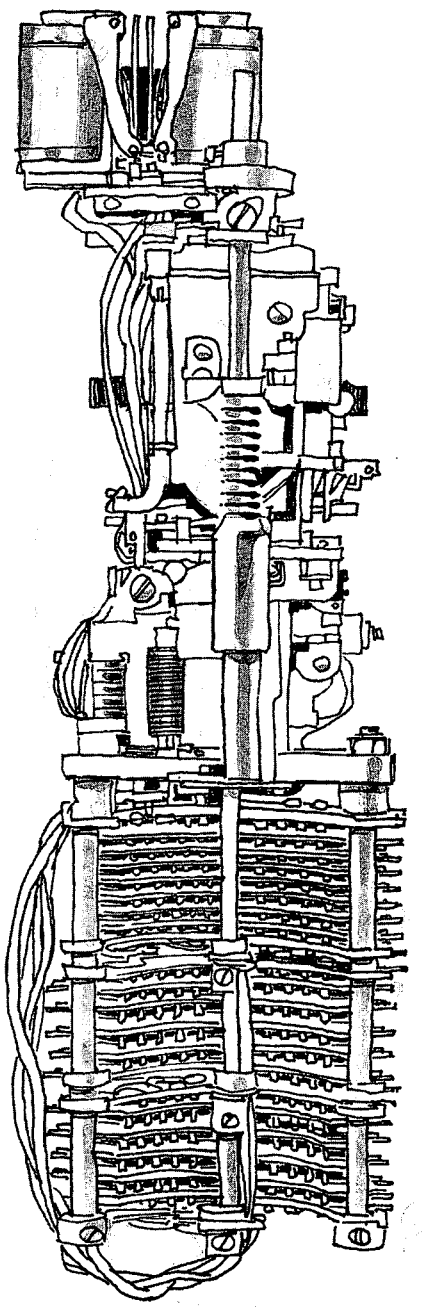
Switching in the nineties

Going all the way back to the beginning, Alexander Graham Bell, working in his Boston boarding house, spilled acid on his pants and shouted: "Mr. Watson, come here. I need you." There was no switching needed then. Thomas Watson, with his head buried in the equipment in another room at the other end of the hall, heard the message that had traveled directly over what would now be called a private line.

Telephones for the first year or so were all like that—a single private line hooked up permanently between two transmitter/receivers. It was not unlike the arrangement we all tried as youngsters with soup cans and a taut string running to a friend's house. Incidentally, the sound reproduction was not much better on Bell's original phone than on a soup-can telephone. Bell's experiment has been recreated in a number of museums and only serves to point up how far we have advanced in 105 years.

Very early in the game, switching became a necessity. Subscribers wanted to talk with others besides the "help" in the kitchen or the stables. It was this desire to communicate widely—on business as well as on social levels—that led to the establishment of the central office and the employment first of young boys—who often turned out to be rude and impertinent—and then of refined young ladies with voices that had smiles in them.

At this point, confusion arises. It is very easy to lump together all of the central office paraphernalia that makes completion of a call commercially feasible and label it switching equipment. It is the crosspoint that is the heart of the matter—that point where the line from the caller meets the line going to the person called. Everything else is peripheral—the ringing to attract attention, the buzzing to indicate a busy receiving terminal and the equipment for computing billing charges.



A step-by-step switch

The earliest switches used in telephony were adapted from those used in the telegraph business. The board, a panel of wood about four feet long and two feet high, was covered with shiny brass strips that looked from a distance like a display of door hinges. The earliest models could interconnect eight or ten subscribers.

Charley Scribner, a teenager working for Western Electric in Chicago, came up with a much better method of switching soon after we entered the business in the fall of 1878. Instead of the crude latch switches, consisting of screws and a strip of brass, he designed a system of sockets, or jacks, with plugs on flexible cords for simple interconnection of up to 50 subscribers by an operator. Later, he expanded the system with multiple boards, and his models served as the world standard for 50 years. Some manual private branch exchanges (PBXs) still use the system today.

Automatic switching came along before the turn of the century. A Kansas City mortician named Almon B. Strowger alleged that many calls to him from relatives of the recently deceased were being diverted to a competitor—and he may have been right. The telephone operator in the center of the controversy was the wife of said competitor. Strowger, a forthright man of action, set out to invent a device that would eliminate the human element and any potential hanky-panky from switching. He received a patent on his invention in 1891 and the first commercial model was installed in LaPorte, Ind., the following year. Step-by-step systems employing Strowger switches are still in use in many central offices all around the world.

In the first step-by-step system, a customer could connect his line to any of 99 other customers by first

pushing a button that electromagnetically controlled the vertical movement of the contact arm of a stepping switch and then another button that controlled the horizontal rotation of the arm. A third button restored the switch to its starting point.

Once the number of customers served by a step-by-step system exceeded 100, a mechanical means of connecting central offices was required. This major step in the evolution of switching was accomplished by allowing the system to participate in selecting the route of the call. Each customer was connected to a stepping switch known as a selector. The selector would move vertically in response to the pulses of the first digits dialed (the dial had replaced the push button by then) and would then "hunt" in the horizontal direction for an idle circuit called a trunk.

Once an idle trunk was found, the customer had a direct line to the group of stepping switches that served the 100-customer group containing the party he or she wished to call. Further dialing then controlled this group to provide the proper connection.

After purchasing such systems for a number of years, the Bell System manufactured its first step-by-step system in 1925. It was cut over into service at Springfield, Mass. in 1927. Although service to 10,000 customers is feasible, step-by-step systems are today used primarily in smaller offices.

Actually, we're getting a little ahead of our story. There is a good deal of overlapping between switching systems, and while improvements were being made in step-by-step systems, other systems were being introduced.

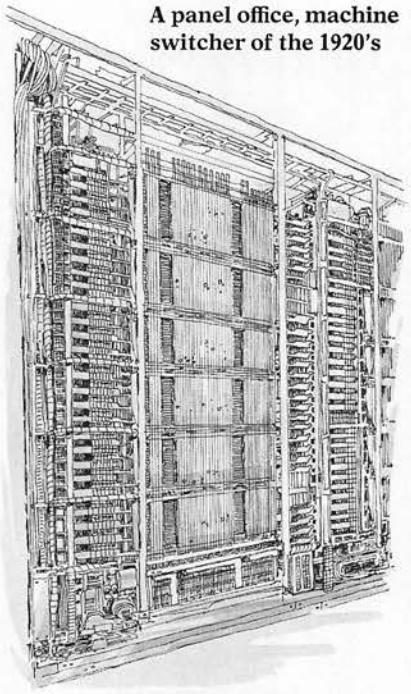
One of the most important new concepts was *common control.* Studies made by the Bell System soon after the turn of the century indicated that money could be saved by increasing group size and by removing the restrictions imposed by dial control of the stepping switch. In 1905, E. C. Molina of AT&T proposed that the switches be controlled by equipment at the central office, rather than by the telephone dial at the subscriber's home. This control equipment would be shared by a number of switches and, thus, would be common to them.

The first system to provide such common controls was the rotary system, which never became very popular in this country. Close behind it came panel, which was the first of the Bell System's machine switchers. In 1915, there were two semi-mechanical offices cut into service in Newark, N.J. The telephone user gave the number to the operator who then completed the call through the switching machine. The first panel-type full-machine switching office was cut into service at Omaha, Nebraska in December 1921. There is still one panel office in service, but it will be replaced in 1982. The system, compared with more modern ones, is slow and requires constant maintenance. Dust and dirt accumulate on moving parts and cause electrical noise. Also the moving parts wear out.

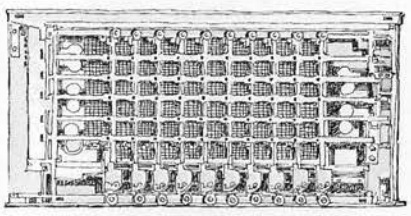
A crossbar switch was proposed in 1913 by John N. Reynolds of Western Electric. It contained a grid of 10 horizontal rods and 20 sets of vertical ones. There are movable metal contacts at each crosspoint. Electromagnets control the operating and holding of as many as ten of the movable contact sets at one time to connect ten of the vertical sets to ten horizontal sets.

The #1 Crossbar system was designed to be introduced in areas having panel systems without changes in either the existing offices or in existing telephone instruments. It was a tremendous advance in electromechanical switching design. Its major advantages are the freeing of the con-

A panel office, machine switcher of the 1920's



In an ESS office, you no longer hear the clicking sounds that are so distinctive in a crossbar office



A crossbar switch

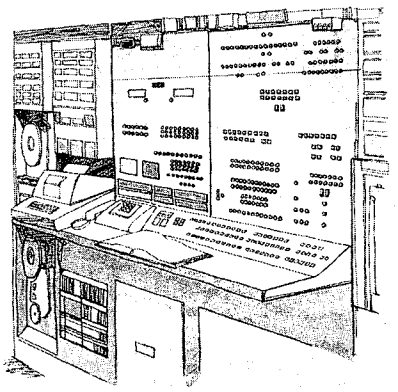
trol circuit after establishment of the connection, the alternate routing of a call if its primary route is busy and the automatic detection and reporting of system failures. The system was the workhorse of the switching network in metropolitan areas for a number of years after its introduction in 1938 and still is in some areas.

The #4 Toll crossbar system came along in 1943 to enable automatic switching of toll connections in and out of metropolitan areas. Then, in 1948, the #5 Crossbar system was designed to meet the switching needs of central offices located on the outskirts of metropolitan cities and of medium-to-large-sized offices in other areas. The first office of this type was installed in Media, Pa.

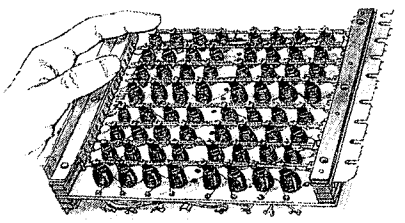
In that same year, 1948, the transistor was invented, which opened the door for electronic switching. It was predicted that transistorized electronic logic circuits would some day provide faster and more flexible switching with the additional advantages of reduced size and cost.

Work began on such a system in 1954 and led to a field trial at Morris, Ill., in 1960. The Morris central office basically consisted of a switching network and stored-program-control. The control circuitry was essentially a special-purpose computer with both a semipermanent and a short-term memory. The semipermanent memory contained the basic processing routines for routing calls through the office, and the short-term memory was used to store temporary information used in the processing of a call, such as the digits of the number being dialed.

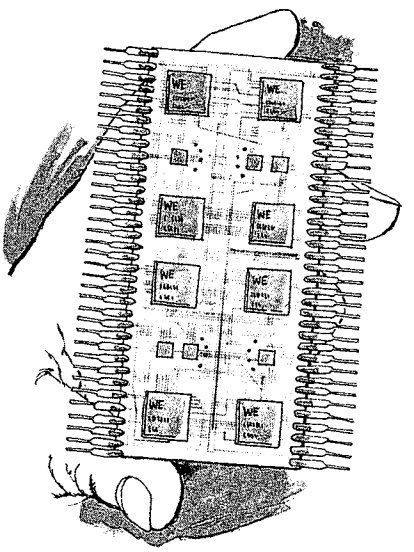
As a result of the Morris trial, the #1 Electronic Switching System (ESS) was developed for commercial use. It functioned in basically the same manner as the Morris system; however, the components were drastically different. The first #1 ESS was cut over at Succasunna, N.J. in 1965, the #2 ESS was introduced in 1970 for use in suburban offices and #3 ESS came along in 1976 for use in rural exchanges.



Master control, #1 ESS



A ferreed switch module



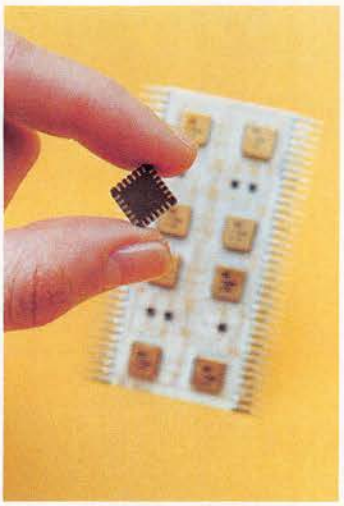
A gated diode array

When ESS appeared in the mid-1960's, the cross connection to complete a talking path took place inside a sealed glass tube—but there was still physical movement as the ferreeds and later the remreeds in these tubes came together or separated. In an ESS office, you no longer heard all the clicking sounds that were so distinctive in a crossbar office and you really couldn't see the flexing of the tiny reeds; they were nestled inside a coil and hidden away with hundreds of others in the innermost reaches of a frame. All you could see from the aisle was a face plate on the narrow edge of a plug-in module.

#4 ESS, designed for toll call switching, made its national debut in Chicago in January 1976. At the heart of the #4 system is the 1A Processor, a stored-program control unit with advanced integrated circuitry and an improved magnetic-core memory system. It can execute call processing instructions four to eight times faster than earlier ESS control units.

#4 ESS is the first to use time-division switching techniques instead of the traditional space-division technique. Words and data are transmitted in digital pulses, which travel in a common switching path, separated by millionths of a second. Switching is accomplished by shifting a call's time position on the path. The system can switch digital signals directly without prior conversion to the traditional analog form.

With the advent of #5 ESS and something called the gated diode crosspoint (GDX), switching takes place inside a solid state device (see page 24) as was predicted a generation ago. There are no moving parts inside a GDX. WE



Left—Gated diodes are small. Eight of them are mounted on the ceramic substrate. Right—Senior Engineer Joe Schwermann compares a gated diode array with a fereed module.

Why Digital?

Digital switching is clearly the wave of the future

In any discussion of switching today, the first thing to make clear is that there is a difference between a digital switch and the switching of digital information.

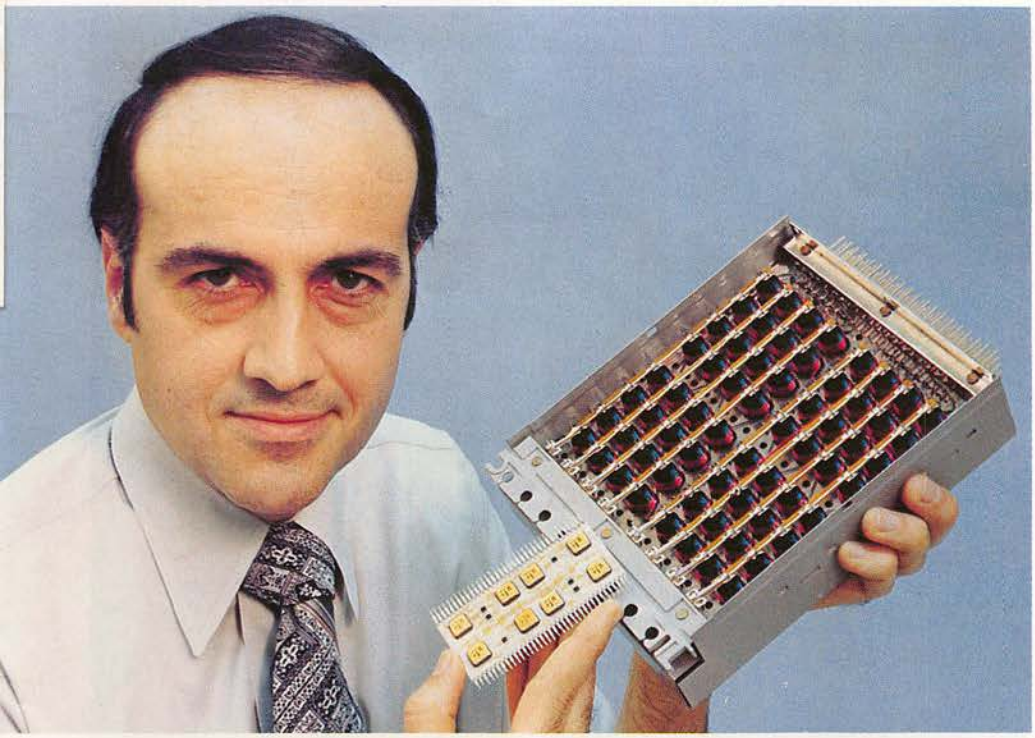
We have been able for years to switch, with some conversion, a stream of pulses that forms a digital message in transmission. T-carrier transmission systems, which are digital, were introduced by the Bell System in 1962 and in recent years have handled most of the growth in urban interoffice trunks. Digital carrier systems are being used increasingly in rural subscriber loops. And digital radio systems are beginning to appear in the interstate toll plant. Lightwave communications systems are digital and they too are beginning to appear all around the country. The information carried by all of these media are successfully switched by present analog facilities, with some conversion going in and coming out.

Why then do we want to get into the other aspect—a digital switch?

The main advantage is that we can eliminate some conversion of signals from digital form to analog form. Such conversion is expensive, and as we continue to increase our digital transmission facilities in the Bell System network, more and more digital signals would have to be converted to pass through analog switching machines.

We also are getting into digital switching because solid state technology has progressed fast enough and far enough to make such a switch economically justifiable. Technological advances such as VLSI (very large scale integration), which enables us to put large

Evvi Ross of the Reading Works displays a "planet" of 21 gated diode wafers before loading into a machine that deposits a thin aluminum film on them.



amounts of circuitry on tiny silicon chips, are helping to bring down costs.

However, it is important to realize that it is the computer-like "stored-program-control" (SPC) of switching machines that makes it possible to introduce new features —and it was the Bell System that introduced SPC when it developed electronic switching systems in the early 60s.

The Bell System's first digital toll switch was the #4 ESS—introduced in Chicago in 1976 and rapidly becoming the workhorse at AT&T's Long Lines Department. The #4 was the first to use time-division switching—a very fast efficient switching technique, which we more familiarly refer to as digital.

In time-division switching, the electrical signal that represents a phone conversation is first sampled 8,000 times a second. Then the value of each sample is encoded as a group of "on-off" electrical pulses. Each group of eight pulses is less than a millionth of a second long.

The brief pulse groups of several different calls are then positioned in time slots along a single physical path within the switcher. Thus, each path through #4 ESS carries the pulse groups of many calls, separated only by time. Switching is accomplished by timing the release of pulse groups so that they reach the proper outgoing channels —somewhat like passengers on a train getting off at just the moment when the train is stopped at their stations. In this way the pulse groups of each particular call are directed to the proper outgoing channel, where the original signal representing each conversation is reconstructed. Calls are then transmitted to their destinations.

This complex manipulation of electrical signals is accomplished by a highly accurate electronic clock combined with very fast electronic memories that are integral parts of the switching system—all controlled by a stored program processor. Everything happens inside solid state devices so that there are no moving parts.

Some of the technology that went into the #4 ESS is being adapted for use in local switching systems. The system to be called #5 ESS will debut toward the end of this year.

The basic switching element of the new #5 ESS will be the gated diode crosspoint (GDX)—a solid state device. The crosspoints are the spots where all the lines involved in a telephone call are actually connected. In an analog switching system, a physical metallic path is established by closing switch contacts. In a digital system, the path is "gated" electronically.

The GDX has been designed to withstand surges of up to 500 volts —something that had previously been unheard of for semi-conductors. Relatively high voltages are needed in a local office for signaling and ringing, whereas the trunk circuits switched by #4 ESS do not require any of these high energy signals. These signals are instead sent over separate paths called CCIS (Common Channel Interface System).

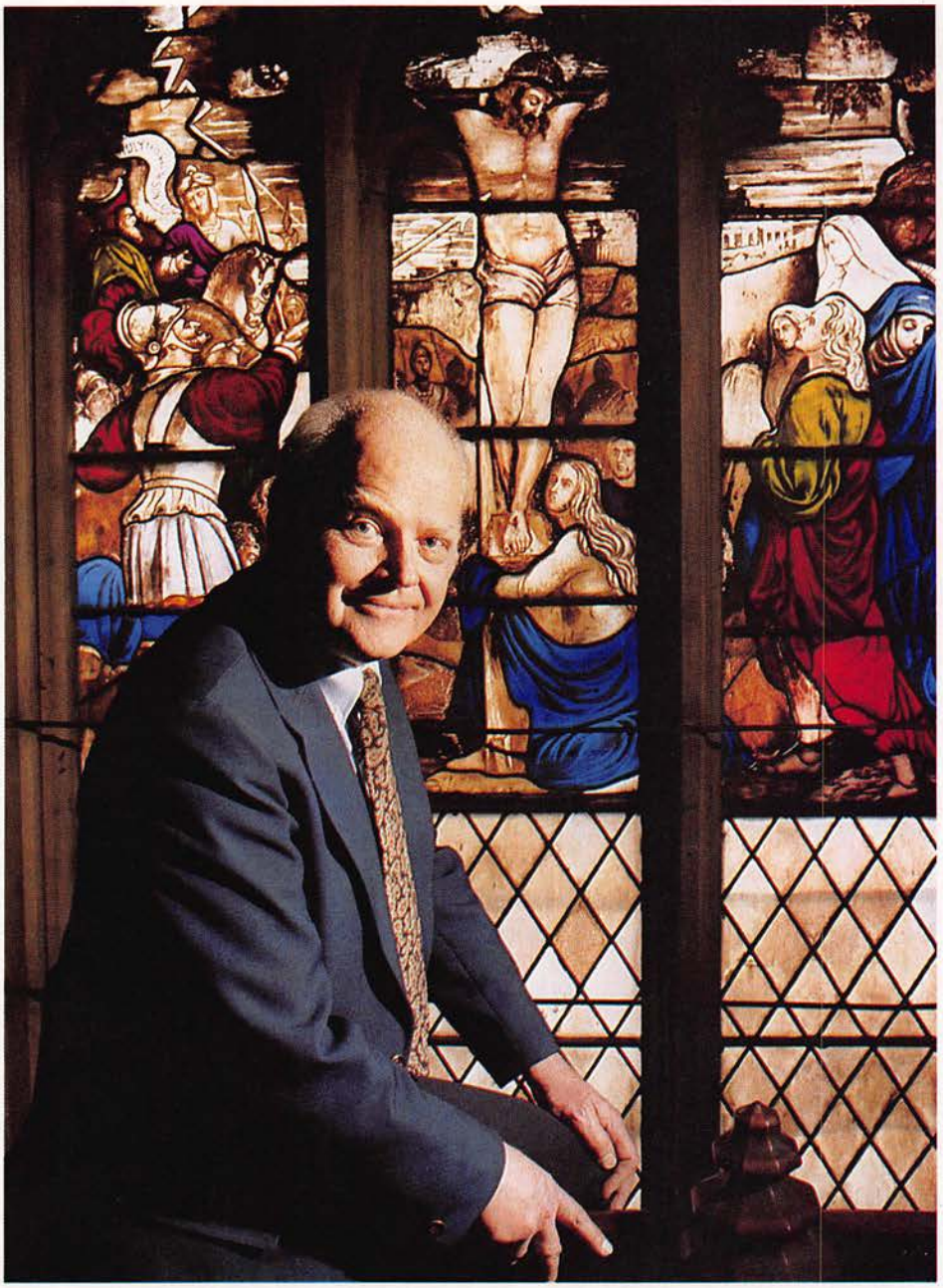
The GDX chip is fabricated at Reading Works and is among the most complex integrated circuits we have ever attempted. Making it requires such "high-tech" processes as plasma etching and ion implementation, and about 200 separate process steps are involved.

The new crosspoints are assembled on a ceramic substrate at Hawthorne and then shipped to Northern Illinois and Oklahoma City Works for insertion in a plug-in unit.

The GDX array is electrostatically sensitive. This means that the static charge created merely by running your fingers through your hair or brushing some lint off your sweater with your hand is enough to destroy the device. Special assembly and handling facilities must be provided to prevent this problem. These items consist of ionizing work stations, grounding straps for operators, and antistatic trays and product packaging.

At Oklahoma City, manufacturing facilities are being installed and special electrostatic discharge (ESD) awareness programs will be conducted for all employees who will come in contact with static-sensitive components and circuit packs. WE

Spotlight on People



"Mankind was never so happily inspired as when it made a cathedral," said Robert Louis Stevenson, and Dr. Robert Vadheim of the Headquarters medical department in New York agrees. In fact, he does more than agree—he works hard at keeping one of those inspirations alive. His unusual patient is the 136-year-old Church of St. Ann and the Holy Trinity in Brooklyn, N.Y., and this magnificent old structure is in desperate need of help. Its roof leaks, its brownstone exterior is dangerously deteriorated and its once breathtakingly beautiful stained-glass windows are buckling and falling to pieces.

The only medicine that can save St. Ann and the Holy Trinity is a massive infusion of money—an estimated $1.5 million. Dr. Vadheim devotes much of his spare time to raising that money while serving on the Benefit Committee of the New York Landmarks Conservancy, a private organization dedicated to the preservation of historically, architecturally and culturally significant buildings.

"I've always been interested in old buildings," he says. "Architecturally, we have so little history here in the United States and we keep destroying what we have."

His special affinity for old buildings began 17 years ago when he bought an old brownstone house in Brooklyn Heights within walking distance of St. Ann and the Holy Trinity. He has been working at restoring the building ever since, usually under the careful supervision of his cat Charlie.

Dr. Vadheim has lots of cohorts in his battle to restore St. Ann and the Holy Trinity. Saving the old church has become a local *cause célèbre,* joined by such notables as *New Yorker* theatre-critic Brendan Gill and Mrs. Vincent Astor. Dozens of articles in support of the restoration campaign have appeared in the local press, and the New York State Legislature has even issued a resolution to commemorate the efforts on the church's behalf.

None of this is surprising considering that Holy Trinity, as it is affectionately called, is one of the most distinguished examples of the Gothic Revival style in the entire country. Sometimes referred to as "America's Canterbury," it was designed in 1847 by Minard Lefever, a highly popular architect who built many public and private buildings throughout New York, New Jersey, New England and Canada.

Perhaps even more important historically than the structure itself are Holy Trinity's 60 stained-glass windows. Created by William Jay Bolton, they are the first complex of stained-glass windows made in this country, and each is a work of art. The windows in the clerestory depict scenes from the Old Testament, while those in the galleries are scenes from the New Testament. Additional windows along the side aisles portray the tree of Jesse. Dr. Vadheim says that even in their present deteriorated condition, they tend to leave visitors awestruck.

For himself, he tends to be a little awestruck by another of the old church's attractions. An organist in his youth, he thinks Holy Trinity's 54-year-old, five-manual Skinner organ is one of the finest ever made. "It would," he notes, "cost a half-million dollars to build it today."

The organ is sometimes used for more than services. For several years, Holy Trinity has served a dual function; its superb interior is often used as a cultural center for theatre, dance, music and opera. The center's programs are known collectively as "The Arts at St. Ann's," and Dr. Vadheim supports them by printing tickets and cocktail napkins on a 50-year-old hand press he received for his 12th birthday.

A quiet, self-effacing man, he isn't given to lengthy explanations of his efforts. He'd rather talk about the church than about why he's trying to save it. When pressed, he simply shrugs and says, "It's just the right thing to do."

Left—Dr. Robert Vadheim in front of one of the stained-glass windows he is working to save. Right—Mayor Tommy Williams and his town hall.

Until recently, like many towns its size, Staley was dying—mostly of apathy. "We were on the verge of losing the town," says Mayor Tommy Williams. "We almost lost our charter," he adds grimly.

Staley, population 250, is sandwiched between Liberty and Ramseur, about 25 miles south of Greensboro, on U.S. 421 in North Carolina. It's a quiet town.

Williams, who works in Purchasing at the Guilford Center, was elected mayor of Staley in 1979. Since then, he has worked tirelessly, with the town's board of commissioners, to save his birthplace.

"It was a tremendous job to get people involved in saving the town," says Williams. "But we did it. Now people are again proud to live in Staley."

Williams has spent all of his life in Staley, and as a youngster "right out of high school" he traveled to Burlington to find work at Western Electric. His first service to the community was as a member of the town board of commissioners, which he now heads.

After two terms on the town board, Williams left the political life for a while, only to return years later to seek the mayor's seat.

It was during his campaign for mayor that Williams first began to attack the town's apathy. One of the major goals of his three-month candidacy was to get a large voter turnout on the day of elections. Many telephone calls and face-to-face contacts with potential voters did the job. Of Staley's 120 registered voters, 85 percent went to the polls. "It was like starting a new town," says Williams.

As Staley's mayor, Williams has no vote in the town council, so he feels his role is to "keep folks working together." He is also quick to give credit to the four men and one woman on the town's board. "Together we've accomplished a lot," he says.

After hiring the town's first lawyer to get the books straight and to keep them in order, Williams and the board began to look at other ways to bring Staley into the 20th century. The board met 30 times over the past year, while in previous years it had met only twice.

Of the board's accomplishments, if saving the town's charter was its greatest, then the next one was to open Staley's first town hall. "It was the first time the town bought property," Williams says, "and it wasn't easy." The building was owned by a retired barber who had used it for his shop.

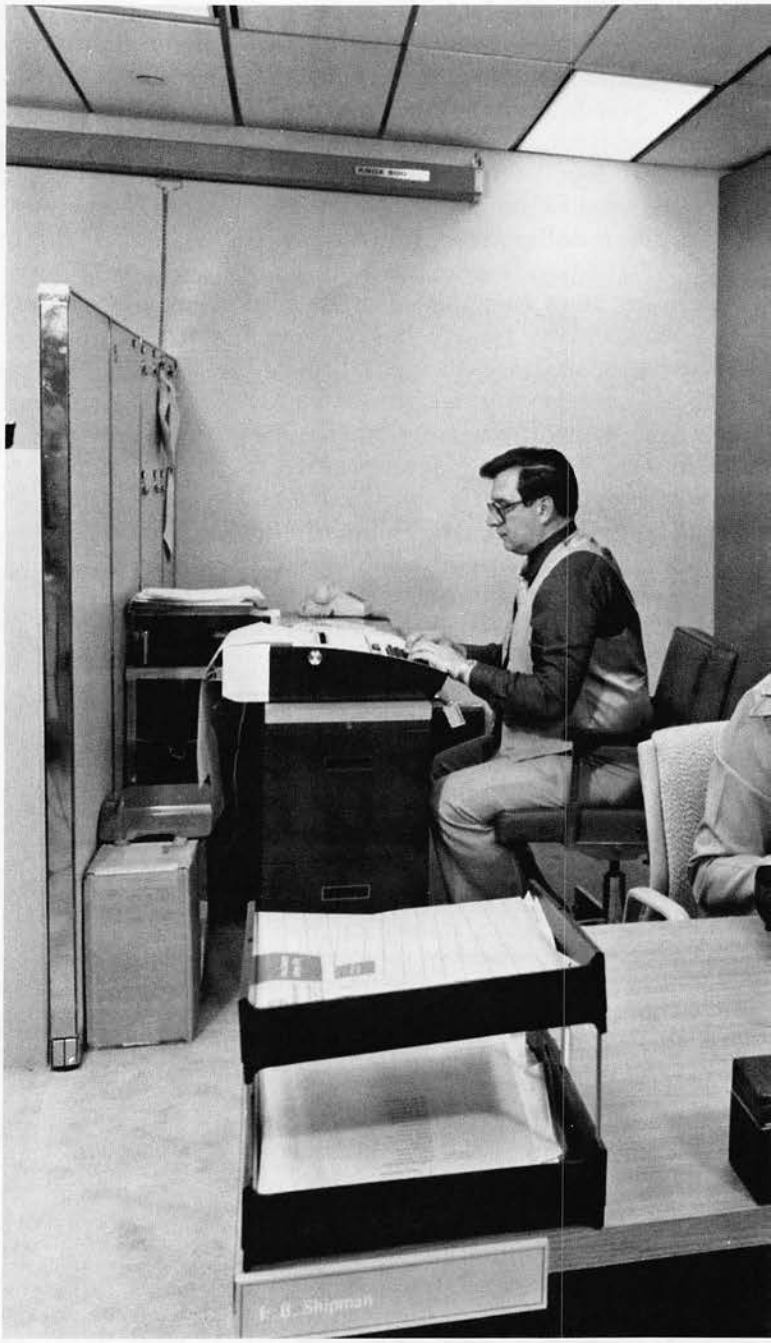
Under the careful eye of Robert Hicks, a member of the board of commissioners, the new town hall was born. Many of the commissioners pitched in to help. At a total cost of about $14,000, Staley now owns a town hall.

Williams and the town commissioners are not paid for their work. "It's all voluntary," says Williams, "and in a small town that can be tough, especially with the amount of criticism you have to take." Williams feels that satisfaction comes in service to the community and in getting things done. "That's our reward," he says. WE

War Room Strategy

By Elizabeth M. Perlman

The "war" in these war rooms is a battle against time



"The war room in Piscataway worked during 1980—and its counterpart is working here at Morristown in 1981." That's the confident statement of Art Collins, senior specialist in the material planning and management group for transmission equipment at Southgate in Morristown, N.J.

The war rooms Collins refers to are project management centers from which Western's material planning and management group has been directing the vital effort to increase the number of intercity Digital Data System (DDS) network facilities called DiGroups for AT&T Long Lines department. A DiGroup can be defined as a digital transmission capability between two points, e.g., New York to Chicago. In 1980, the DDS project was administered by Western and Long Lines from Long Lines'

In the DDS war room at Southgate, Bill Zazula consults the computer while Betty Shipman updates information at the terminal.

headquarters in Piscataway. The "base of operations" has since been relocated to Southgate, where the Western Digital Project team continues to direct the construction of this network for business-machine communication.

The war room at Southgate, like its predecessor, is festooned with charts that list the names of every intercity DDS DiGroup with space for the addition of engineering status, shipping dates, installation dates, cutover dates, and priority-numbered service dates. There are computer printouts from which the boards are updated with brightly colored felt-tip pens.

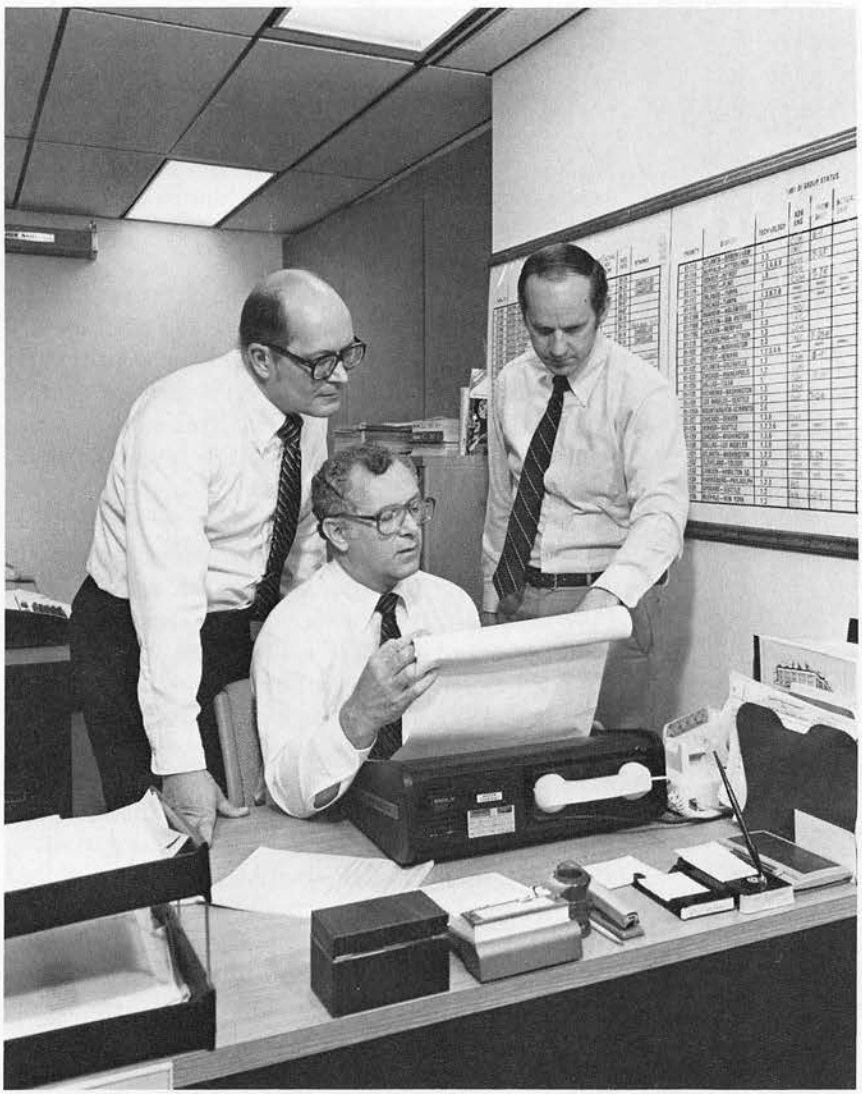
The DDS DiGroups being constructed are part of a growing digital network that makes it possible for business machines to communicate with other machines over private-line circuits. During the five-year period prior to 1980, 140 of these DiGroups had been installed around the country. By the end of 1980, Western was enlarging or installing an additional 206 DDS DiGroups that were needed by Long Lines to meet the heavy demand for this service.

At present, the largest customers for the Digital Data Service are computer-service companies, financial houses, insurance companies, and airlines. As the service grows in scope and size, so too will the number and range of industries. At the end of 1983, the DDS network will be seven times as large as it was in 1979. This network has the potential of becoming as vital as the long distance telephone voice network.

Installing so many DDS facilities in one year meant that Western Electric was faced with a mammoth job across the board. Detailed regional engineering of DiGroups, factory production of the accompanying equipment, and installation for cutover by Long Lines, all had to be done in a fraction of the normal time frame. Thus, the overwhelming need for a war room from which to manage the resources needed for the project.

The DDS project is coordinated at Southgate by Jack Bishop, assistant manager in material and account management. He explained that the DDS project began in Bell Sales but its rolling impact was felt company-wide. Bishop explains, "We realized right away that to manage a project of this scope meant total cooperation from all phases of the WE operation. We had to manage every facet and have things going at top speed to meet deadlines."

Collins added, "We started out using index cards to schedule events. It was awkward, but we lived with it for a short time. Bill Zazula was added to our staff late in 1979, and one of his interests was computers. His knowledge made it possible to use



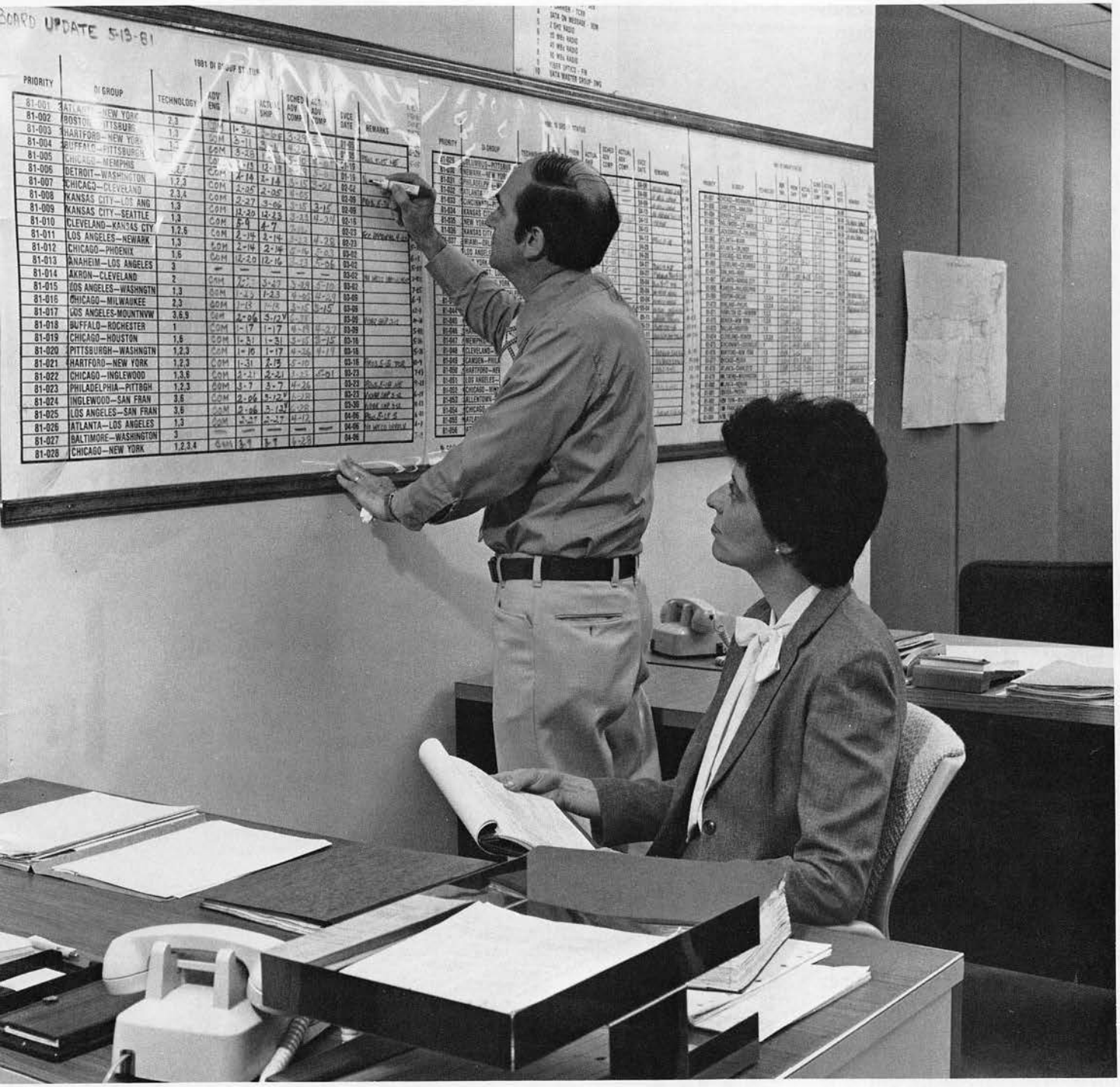
Getting the job done is really what the war room is all about

Left—Jack Bishop (left) confers with Jerry Surette (right) and Art Collins about the schedules for constructing the DiGroups. Right—Maxine Altman works with Mike Roscigno to keep the charts up to date with information from the computer printouts.

programs to compile information in such a way that all phases of the project could be monitored and analyzed. Communications with Long Lines were completely open. The manufacturing, the regional scheduling people, and all of us had access to the same information. When things weren't going according to plan, any member of the team could take action to correct it. The team now includes John Lanari, Maxine Altman, Betty Shipman, and Mike Roscigno. John handles the toll terminal equipment, Maxine and Mike are working with the regions and Betty keeps our data base up to date."

While at Piscataway the joint team of Western Electric and Long Lines met formally once a week to conduct a total review. All phases of the project were scrutinized to spot problem areas. The team often called for assistance and information from systems equipment engineers; engineers, and supervisors from Merrimack Valley, North Carolina Works, Kearny, and Kansas City; installation supervisors from all seven regions; regional customer service staff members; network operations staff members; the Product Line Planning and Management Group; and from Purchasing. Long Lines' representatives included facility and equipment engineers, and marketing people.

Every member of the team had access to up-to-



date schedules of the equipment as it was being manufactured, as it was being shipped, and as it was being installed.

The primary locations for manufacturing DDS equipment have been Merrimack Valley, North Carolina, and Kearny. According to Bishop, "Merrimack Valley, North Carolina, and Kearny pumped out the products we needed when we needed them. They started from a standstill and they really started running. They were already busy with high frequency line equipment, but they were able to get the digital bays and panels on line and out the door in record time.

"The installers from the regions were working hard for this project too. They responded to the short interval between shipping dates and cutover dates and they got the job done."

Getting the job done is really what the war room is about. As Director of Material Planning and Management for Transmission, Switching, and Purchased Products, Jerry Surette, puts it, "We formed a team to oversee the project from network planning to service cutover and monitored the progress of each DiGroup in each phase of activity. The team took the project responsibility and customers' needs very seriously. The project managment team approach worked in 1980 and is working again in 1981." WE

Bluejeans and Coveralls

Renovating an orphanage takes time, money, muscle— and heart

By Linda Edgerton

Each Saturday morning a reconditioned church bus lumbers into a parking lot in Lexington, North Carolina. Its passengers, dressed in blue jeans and coveralls, pour across the lot carrying lunch baskets and work tools.

The passengers are Pioneers. They belong to The Old North State Chapter 79, representing company locations in Burlington, Greensboro and Winston-Salem. Their destination is a dormitory at the Junior Order Children's Home, an orphanage housing more than 60 youngsters. They are renovating the dorm as their major community service project for the year.

The Junior Order Children's Home was founded in 1927 by a fraternal organization, the Junior Order of United American Mechanics. And the dormitories there are well over 50 years old. Financial support for the orphanage comes from founders, county and state government, Home alumni, and civic organizations. But yearly income barely covers operating expenses, leaving little for upkeep or improvement of the living quarters. To ease the situation, two of the three dormitories in use at the orphanage were renovated in recent years by area business and civic organizations. But a third and the largest of the dormitories, the Pennsylvania House, remained in poor condition.

Much of the credit for Pioneer involvement in renovating the Pennsylvania House goes to Life Members Louie and Doris McGowan of Winston-Salem. Through volunteer work at the Home, they had a first-hand look at housing conditions and turned to the Pioneers for help.

Chapter 79 gave the project its enthusiastic support, and President Edith Brann tapped Life Member Henry Wesley for project manager.

"Have you ever tried to say 'no' to Edith Brann?" Wesley quipped. "Seriously, I was delighted to take on the project."

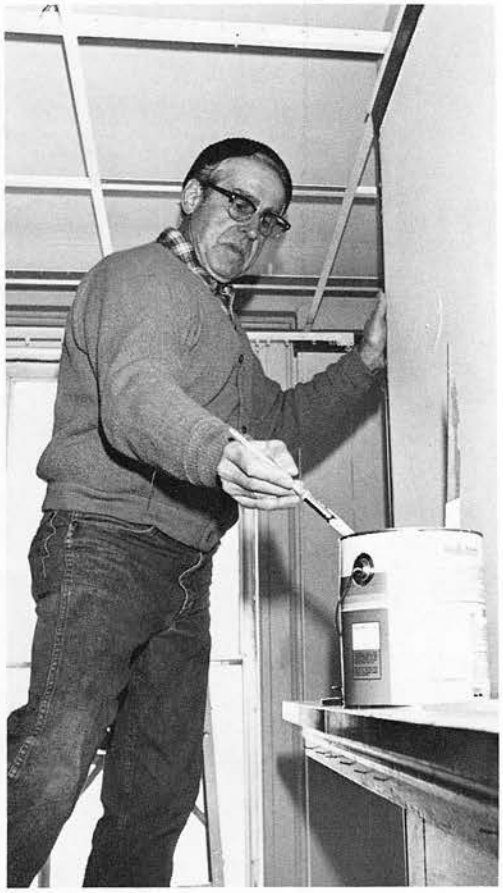
Wesley explained that Pennsylvania House has two wings, and that the Pioneers have been working since early February on the east portion of the building. Renovations on the west wing will be carried over into the next Pioneer project year, which begins July 1.

"There are three basic things we're doing to the facility," Wesley reported. "First, there are repairs to be made—doors off their hinges, rotting window frames, bad plumbing, inadequate wiring and the like. Secondly, there are modifications. We're remodeling the kitchens at Pennsylvania House, and we're tearing out old walls and adding new ones to convert six, single-bed

Left—With tools in both hands, hard-working Ruth Hamilton salvages some lumber. Below—Pioneers arrive bright and early for their Saturday work session at the Pennsylvania House at the Junior Order Work Home in Lexington, N.C.

rooms into two, three-bed rooms. The directors of the Home feel sharing a room gives a child a greater sense of belonging, and we were happy to oblige by making the structural changes. And finally, there are the cosmetic things, like painting and sprucing up. All this translates into a lot of scraping, patch work, carpentry, painting, plumbing and rewiring."

To accomplish the renovations, Wesley named Len Schaffer as assistant project manager, and the two pulled together a coordinating committee of more than 30 Pioneers. The committee includes chairmen for fund raising, interior design, material purchases, transportation, engineering, skilled trades, first aid, and a host of other areas of responsibility.



Above—Scott Graves sandpapers off the high spots on replastered ceiling.
Left—Taking care not to drip, Al Freund tries his hand with a brush.

The chapter's four councils alternate responsibility for staffing at the site. Workers are picked up by the Home's bus at 8:30 on Saturday mornings, and they usually arrive in Lexington by 9:30 a.m.

"Key to our organization at the work site are Ted Getchell, our project superintendent, and John Barnette, our project engineer," Wesley explained. "As our workers arrive, Ted makes assignments. And he always makes sure our 'weekend' carpenters are supervised by an experienced carpenter. The same goes for plumbing, wiring and other areas requiring exacting work. As project engineer, John determines what needs to be done and how to do it. And he works closely with the group's purchasing agent, Gene Lankford, to make sure the proper tools and materials are available."

"Even the best of carpenters will occasionally get a splinter, cut or bruise, and with that in mind, we have a WE nurse on duty each weekend too."

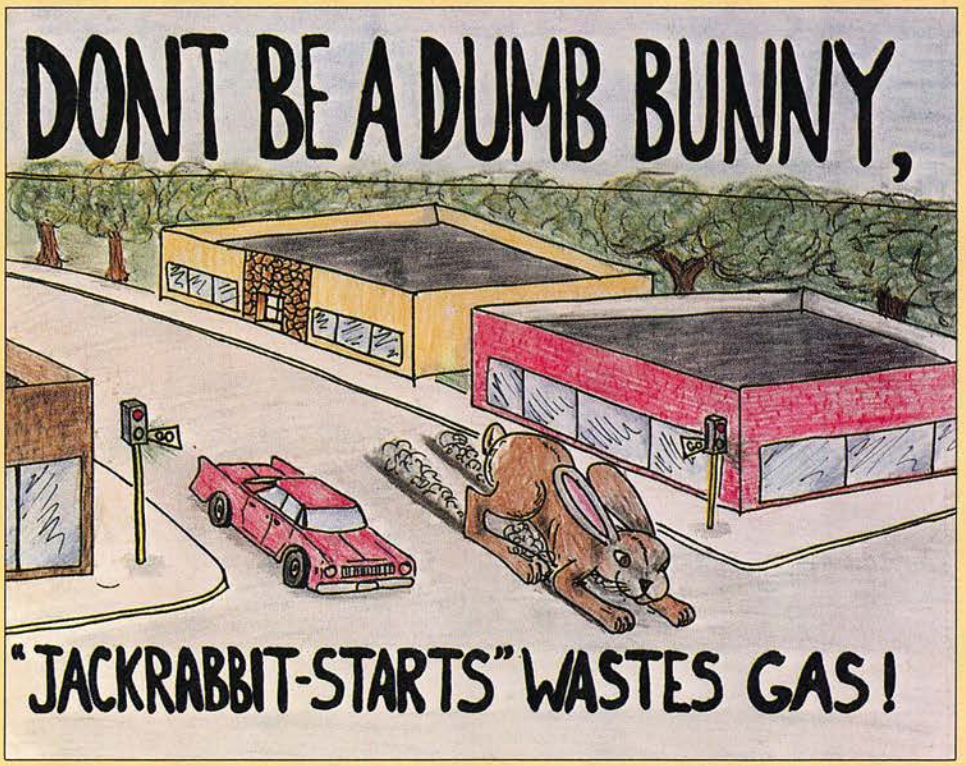
Wesley estimated half the 400 Pioneers involved in the project are from the Chapter's three Life Member clubs, with generous assistance from Future Pioneers, too. And volunteers from Teen Challenge, a drug rehabilitation center, are also helping with the project.

"In 1978 the Old North State Chapter renovated a dormitory at Teen Challenge, and the young men housed there decided to pay the Pioneers back for our help," Wesley said. "One Saturday alone we had eight of them helping us. They come whenever transportation is available. And their work is truly from their hearts."

The children from the Junior Order Home also lend a helping hand. "The children are very friendly, and many of them join us in our Saturday work," Wesley said. "We've encouraged those who want to help to do so. I think it makes them feel more a part of the project and helps them have more pride in the finished product."

Edith Brann, chapter president, said she hoped the renovations would mean a safer and more comfortable environment for the children and would contribute to the "home-like atmosphere" houseparents try to establish.

"It's easy to see each of the youths receives a great deal of love and attention from the staff," she said, "and we hope our work strengthens that relationship." WE



A winning idea. For others, turn to page 6.

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