June 1989
Volume 47, Number 9

COMING SOON: ROBOTS THAT DO LINE WORK

Rural Electrification MAGAZINE

STARTING OVER

An Alabama co-op survives a mid-life crisis

New LOAD PROFILER Digitally Records Current Data That Shows:

- **Time-Of-Day Load Fluctuations & Load Cycling**
- **Load Balance On Three Phase Circuits**
- **Magnitude & Time Of Peak Loads**
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Rural Electrification

JUNE 1989
FORTY-SEVENTH YEAR
NUMBER 9

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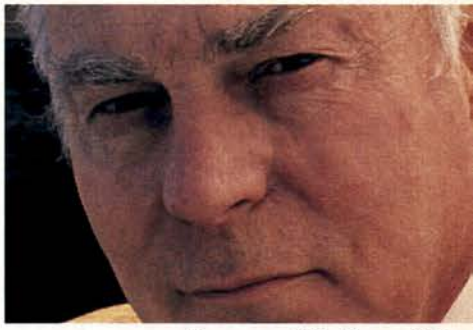

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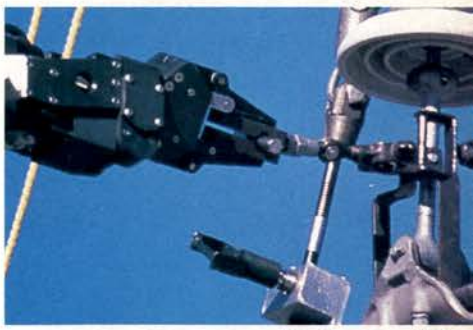

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Rural Electrification MAGAZINE

J.C. BROWN
Editor and Publisher
FRANK K. GALLANT
Managing Editor
LAURA R. LEWIS
Production Editor
ROBERT GIBSON
Features Editor
JOHN VANVIG
Staff Writer
WAYNE BEATY
Technical Editor
GRAHAM W. HOWE
People Editor
LISA GUTTMAN
Editorial Assistant
PATRICK DAHL
JOHN LOWREY
DEBRA BRUNO
Contributing Editors

JEANINE BANKS
Designer
JANE CRAWFORD
NRECA Art Director

National Advertising Sales Offices
6110 Executive Blvd.
Suite 810
Rockville, MD 20852
(301) 984-7333
JEAN ROSENBERG
Advertising and Marketing Manager
JAMIE BLAKE
Advertising Assistant
JULIA HOCKETT
Circulation Manager

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Letters

This page is a forum for your suggestions, criticisms, comments and questions—about the magazine and about rural electrification in general. Letters must be signed, and they may be edited for space and clarity. Please address your letter to Rural Electrification Magazine, *1800 Massachusetts Ave., N.W., Washington, D.C. 20036.*

DON'T TAKE US FOR GRANTED

I think it would be interesting to have monthly articles featuring employees from G&Ts and distribution co-ops, describing their jobs, and their hobbies and backgrounds. I would think it could be anyone from the janitor to a lineman to department heads. They all have an important job to do.

One thing I would like to emphasize is that we are all professionals in our jobs, even though some people don't think so. Sometimes the "lower class" people feel left out in their co-op. The linemen should get more respect than they do; they're taken for granted.

David Holte
McKenzie Electric REC
Watford City, N.D.

You have a very informative magazine, but it seems as though it caters to more of the inside work force of RECs. I realize that with all the paperwork that is required to keep RECs running, that inside jobs are more important in most cases, but remember linemen a little more in your reporting.

Terry Smith
Lamb County Electric Cooperative
Littlefield, Tex.

USER FRIENDLY

Many of us spend many hours struggling to develop personal computer programs only to find out when they are completed that someone else at another system had already developed this idea and it could have been copied at a very nominal fee, or the cost of a blank diskette.

I think your magazine is great and it would be an excellent "bulletin board" where PC programs could be listed, described, etc., for sale or trade.

Keep up the good work!

Rich Walters
General Manager
K.B.R. Rural Public Power District
Ainsworth, Neb.

KEEP IT IN YOUR OWN BACKYARD

Regarding your March, 1989, Currents article, "Setting An Example": If a nuclear plant can be safely decommissioned and dismantled (according to the DOE); why go to all the expense of moving it to Washington?

Living downwind and downstream from a DOE facility, Idahoans are constantly being told how safe the radioactive waste we have buried above our aquifer is.

Well, if it's so safe why not keep it in Pennsylvania? Westerners are beginning to realize that we are America's radioactive waste dump, and we are not happy about it.

In my opinion, if you generate the nuclear waste, you should bury the stuff in your backyard, not ours.

Carolyn Honda
Burley, Idaho

CHECKING THE MAIL

Congratulations on the recent award [Successful Magazine Publisher's Group, first place, association or government magazine] recognizing the achievements and quality of *Rural Electrification Magazine.*

It truly has become an excellent publication. I always think the test of a publication is how anxious readers are to receive the next issue. I look forward to *Rural Electrification* every month.

Win Curtiss
Vice President
Plains Electric G&T Cooperative
Albuquerque, N.M.

Solutions

CAD/CAM: NO SIZE FITS ALL

Just a few years ago, computer-aided design (CAD) and mapping (CAM) had to be done on an extensive, mainframe computer. That meant that most electric utilities still produced maps and designs for substations and other facilities the "old fashioned way," painstakingly making calculations and drawings, then correcting and redrawing them.

Now even a small rural electric system can afford integrated, computerized engineering analysis and mapping tools. Today's high-powered personal computers make this possible.

San Miguel Power Association, a 7,000-member system in southwestern Colorado, started putting together a CAD system about a year ago. Geared toward field surveys and transferring field data to a computer for three dimensional analysis, the system is designed to help the co-op with Bureau of Land Management and Forest Service permits.

"When this all developed we looked at the possibility and the cost effectiveness, despite our small size, of putting together a mapping, facility management, distribution analysis environment in an electronic manner, rather than manually, and tying it all together with a shared data base," says Hart Gleason, staff assistant for the co-op. "In some ways we had the good fortune of having a clean slate. We didn't have any existing methodology that would constrain us. We . . . were pretty much able to design this around today's technology."

San Miguel's desire for an integrated system led the co-op to Southern Engineering and its software packages, DVDCAL (Distribution Voltage Drop Calculation) and IDAGRAM (Integrated Distribution Analysis Graphics and Mapping). "We did an exhaustive analysis of what was on the market at the time and selected Southern Engineering's tools. . . . There are an awful lot of tools that they interface with. So for us it was the best fit," says Gleason.

The system downloads the kilowatt-hour usage information from the co-op's consumer accounting database, and brings it into the AM/FM database, where it is distributed in proportion to the respective transformers, phases and circuits. With this information the co-op can do load flow, voltage drop, distribution analysis.

"We have the ability to ask for a map showing where all the OCRs [oil circuit reclosers] are in a particular area that haven't been maintained since some particular date. Or if we have trouble with a particular type of underground conductor, we can ask for a map showing where that type of conductor is located," says Gleason.

San Miguel bought an existing electronic background map in the form of digitized quad sheets, which allowed the co-op to quickly put background mapping on the computer for its more than 4,000 square miles of service territory. The maps were originally made for the oil and gas industry by a company in Denver and were purchased for just $25 a quad.

The software is run on an IBM PS2 Model 80. "We also have a digitizer and a plotter. The system that we are using is a two-screen system. What we like about this is that one screen is a graphics screen and the other is the data base screen. So if you point at a symbol for a transformer on the screen it instantly pulls up a file showing all the attributes for that particular device," says Gleason.

Gleason recommends that as many people as possible become involved from the start and that you decide what data from the field is really worth tracking. "Is it worth setting up a data base for tracking regulator activity, sectionalizing, OCRs? Do you want to know for your primary metering all of the ratios? Do you want all of that available? Because if you do, you've got to understand that you've got to go out in the field, maybe climb that pole and get all of that data," says Gleason.

"I like the ability to do those 'what ifs' and have that graphical validation, and it allows other personnel to quickly grasp operational and engineering questions. As people get acquainted with the potential of the tool, I get continual requests for expanding what they would like to do," says Gleason.

Phil Lindsey, vice president of Southern Engineering, says, "You can do a lot with just an analysis package, but you can't visually see it happening. It may be a situation where you might want to take a substation out for maintenance and you would want to know if the surrounding substations could hold

(Continued on page 40)

By John Lowrey, a member of the communications staff of Oklahoma Electric Cooperative.

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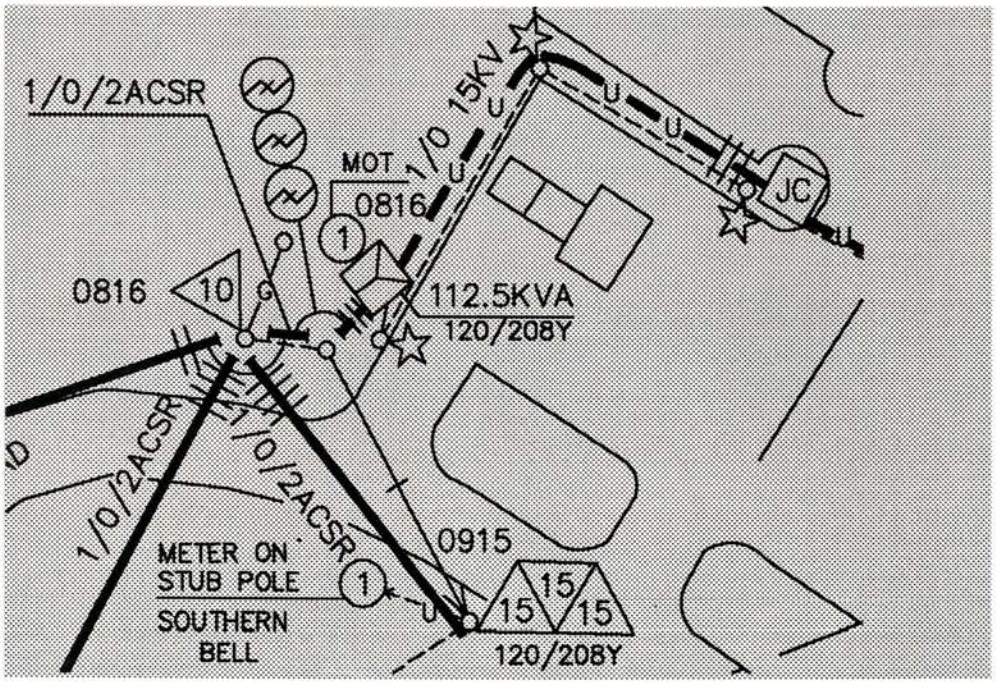
MIGHTY MOUSE!



The pen may be mightier than the sword, but when it comes to utility mapping, the mouse is mightier than the pen.

If you've any doubt about that just talk to the mapping personnel at a utility that has recently acquired an automated mapping system.

At Southern we've developed a variety of micro computer-based mapping systems to fit the wide range of electric system needs. Whether you are interested in a completely integrated mapping/engineering package such as **IDAGRAM**, a detail mapping/facilities management system such as our **AutoCad**-based utility template, or our latest offerings, an **AutoCad/DVDCAL** and **AutoCad/DVDCAL/IDAGRAM** interface, Southern Engineering can fulfill your mapping requirements. And our systems have been developed with emphasis on the features that are important to the user: speed, ease of use, and accuracy of output.

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By John W. Williams

FINDING ABLE DIRECTORS

Vacancies present a golden opportunity to improve the board

Of all the people who make up a rural electric cooperative, there is no group of men and women more crucial to its success than the board of directors.

The board stands at the top of the organizational pyramid. Its responsibility is to set policy, leaving to management the responsibility of implementing those policies. A good board understands why these roles should never be confused.

A good board lets its manager manage, while at the same time leaving its imprint on the character and tone of the rural electric system and its policies. The board sets the standards that are reflected in the way a co-op carries out its mission, in the level of quality and reliability it offers its members.

One of the most important responsibilities of the board is to make sure there is continuity in the leadership of the co-op. NRECA's Management Services Department tells me that about one-third of the roughly 10,000 men and women serving on co-op boards are there because the board named them to fill a vacancy after the retirement or death of a board member. The experience has been that after serving as an appointee, most run for a regular term and are elected in their own right.

The process for appointing, nominating and electing directors is therefore crucial. An open position on the board, filled by appointment, provides a golden opportunity to make the board more representative of the membership and/or add expertise in a specific area.

When this opportunity occurs, the directors need to make the most of it, analyzing the makeup of the board and doing a little soul-searching to see if it really does reflect the membership. For example, are women, younger people and minorities adequately represented? It is generally recognized that rural electric boards could do better here. Let's not forget that much of the organizing of rural electric co-ops and the signing up of the original members in the 1930s and 1940s was led by women. Many sat on the first rural electric boards—far more than today.

There are steps in the director selection process that can help a cooperative improve its chances of recruiting qualified directors. The objective is to find and field candidates of proven abilities, judgment and commitment so the membership can make intelligent voting choices.

Here are some of the things you can do to make sure you get the best board members possible to lead your system:

- Sharpen the selection procedures and demand the highest qualifications for board membership.
- Broaden the base of representation. Seek to involve a wide range of community interests and backgrounds in the co-op's affairs.
- Strive to create an orderly flow of new leadership to ensure a strong line of director and management succession. The result: continuing effective cooperative performance.
- Where necessary, upgrade orientation and training programs for new board members. The NRECA Management Services Department director certification program, calling for completion of the "500" series of training courses, plus the annual directors conferences, are essential.
- Work to clarify and crystallize the roles and tasks of board members. The primary function of the board is to set policy and establish guidelines for management to implement. The two functions are distinctly different, but there must be mutual trust between directors, the manager and the staff.

There is probably no finer example of citizen leadership and economic democracy at work than the rural electric cooperative. We demonstrate the depth of our belief in those principles in the way we recruit, elect and train board members. ●

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By Bob Bergland

SOME OF THE ANSWERS

To your questions about NRECA's 47th annual meeting

For many years, NRECA has conducted a post-annual meeting survey and used the results in planning for the next meeting. This year we sent out some 1,900 questionnaires, nearly all of them to local system managers and board presidents, and got back 626. That's above average.

The respondents rated the meeting "good" to "excellent," and there was not one unfavorable answer or comment to a question about the new shortened format.

It was at last year's summer meeting that the NRECA board of directors made the decision to eliminate the Wednesday afternoon session. That, by the way, was in direct response to comments made in last year's annual meeting survey.

Many people who responded to the survey expressed disappointment over the President's failure to appear. Some even wondered if he had been invited.

I can tell you that all of us here at NRECA were disappointed as well. We not only sent a letter of invitation to him immediately following the election, but followed it up with another in late January, as his staff requested. I don't know why the President didn't accept. But I do know that we called on all our Republican friends in the House and Senate to try to get him on our program. It is a long-standing policy of the NRECA board to invite the President of the United States to our annual meetings. We do it every year.

Some wondered in their comments why we "chose a time for the meeting when Congress was out of town." The answer is, we didn't. We schedule annual meetings 10 years or more in advance, and February 12-15 were the only dates available. The Washington Convention Center is a very popular facility, and we felt lucky to get it.

On the meeting itself, some people wondered why there weren't any administration officials on the program, forgetting I'm sure that Secretary of State Jim Baker was the only appointment that had been confirmed by the time speakers had to commit themselves. Others asked why we couldn't hold the business session on Tuesday afternoon. The answer is simple: that is when CFC holds its annual meeting.

This year, like every year, someone complained that there weren't enough exits in the convention center. In fact, there were 18 exits, all clearly lit and with a sergeant-at-arms stationed at each one. Not only that, but because people are concerned about exits, we put three-by-four-foot magnifiers in front of a number of the signs so they could be seen more easily.

We were not surprised at the number of comments saying that we should choose larger rooms for our panel discussions. We wish we could have. The Washington Convention Center is not an ideal meeting place from the standpoint of our overall needs. Like so many other convention centers, it's designed more for automobile and boat shows than for meetings of our kind. Even so, the panel discussions got top ratings for substance.

One response from the survey that I especially want to comment on has to do with the shuttle bus service. Everyone thought it was great, except those who weren't able to use it because they were staying at hotels that were not on one of the six routes. This situation needs explanation.

As a service to members, and working through the convention bureaus of cities where our meetings are held, a list is compiled of hotels that are willing to provide blocks of rooms for annual meeting attendees. Those hotels have to meet certain criteria, including convenience, size and the overall condition of the property. That list determines the shuttle bus routes.

That means that a state or individual delegation that decides to seek lodging elsewhere is on its own when it comes to transportation. Of course, everyone is eligible to ride the shuttle buses to and from the hotels on the routes. But the driver will not go to other hotels because it isn't part of the contract. Shuttle bus systems are expensive, ranging from $60,000 to $80,000, so we have to limit the number of hotels served.

Thinking ahead to 1990, we'll be holding the statewide draw very soon for hotel accommodations in Orlando. For statewides, if there's any chance that you will not accept the hotel drawn for your state, please notify us right away so that we can either drop the rooms or offer them to another state. For individual co-ops, if you're part of a statewide group and there's a chance that you will go elsewhere for lodging, please notify your statewide early so the numbers can be adjusted. This will help us a lot. ●

3 Reasons

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CURRENTS

- News
- Legislation
- Research
- Trends

HEALTHY IN WYOMING

Over the past four years, all of the smokers at Wheatland Rural Electric Cooperative in Wheatland, Wyoming, have quit the habit. But that caused most of them to put on some weight.

So recently, a group of the employees banded together and joined a local Weight Watchers group. They're part of a new trend toward health consciousness at the co-op.

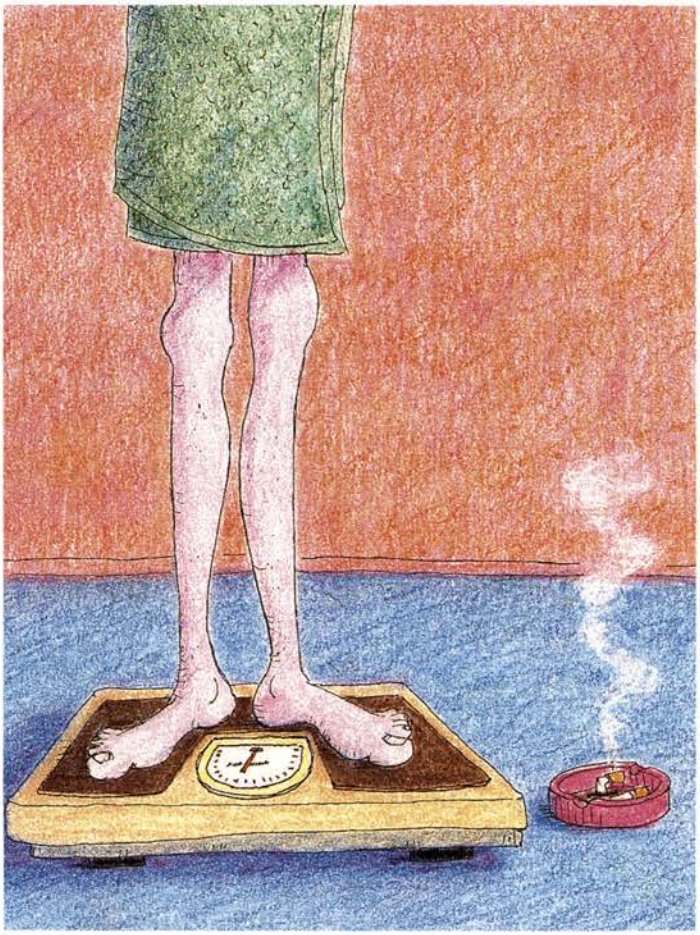
"People started to ask, 'If they can do it, why can't I?' " says Office Manager Pat Morrison. Now, she says, the office workers go for walks instead of taking coffee breaks.

They also eat lunch together and "discuss the value and content" of everyone's repast. They have discovered, for example, that certain frozen diet dinners are high in sodium.

One employee who resisted quitting cigarettes was teased mercilessly, Morrison says. Then, when he did start to quit, the group gave him half of a pacifier. When he finally quit, she says, they gave him the other half.

The only group of employees to resist Wheatland's new health kick is the linemen, Morrison says. They tend to bring doughnuts to eat at their regular safety meetings and pizza for lunch, she says.

Of course, "the linemen get their exercise climbing poles," says Morrison. "We don't."



JIM PATTERSON

MERGERS AREN'T ALL BAD

Mergers of big investor-owned utilities aren't all bad, according to one Washington attorney who has worked on some.

Companies seeking regulatory approval to merge often become much friendlier toward distribution systems and consumer-owned utilities, explains Dan Davidson, a lawyer who worked with NRECA and other consumer-owned power groups on the recent merger of Pacific Power & Light and Utah Power & Light.

"There may be some threats, but there are also opportunities," Davidson says. "Intervene. It really is a wonderful opportunity to settle lingering problems."

Such intervention in the Utah merger case by consumer-owned systems helped bring about assurances of stable or lower wholesale power rates as well as favorable terms governing access to transmission equipment.

CHAMPIONS OF REA

A rising conservative star in the House and the liberal Democratic leader of the Senate hold strikingly similar views on the White House's plans for REA, proving again that congressional support for REA programs spans the political spectrum.

Both Rep. Vin Weber (R-Minn.) and Sen. George Mitchell (D-Maine) have warned President Bush not to pursue the eight-year effort to phase out REA. Weber, in fact, supports a broader scope for the agency.

In a release headlined with a blunt "Don't Cut REA," Weber notes that rural electric and telephone systems are leaders in an emerging movement to strengthen the economy of rural America.

"We should be expanding their ability to spearhead economic development efforts," Weber insists, "not cutting the core out of what has historically been a successful rural program."

Mitchell, meanwhile, states flatly that the Senate majority he controls isn't likely to accept a proposal that's been killed every year for almost a decade.

"For eight years—eight years!—the administration has tried to end the rural electric program," Mitchell thunders. "For eight years, we've prevented them from doing so, and we're going to prevent them from doing so again this year."

JUST SAY NO

More was at stake than a modest municipal load when about 500 voters went to the polls this spring in the town of Mooreland, Oklahoma. "It was the principle—and the precedent," says Jim Donahue, director of public relations for Western Farmers Electric Cooperative in Anadarko, Okla.

Western Farmers sells bulk power to Mooreland's municipal electric system, and it was that contract that was on the line. The city's residents were being asked to ratify a vote to sell their electric system, which had helped fund city services for more than half a century.

The Town Council voted last fall to sell the system to Oklahoma Gas and Electric, a hungry investor-owned utility eager to buy up municipal systems across the state. The power company mounted an aggressive campaign to promote the sale: Consumers in Mooreland were promised "immediate" lower rates if they accepted the IOU's $1.9 million offer.

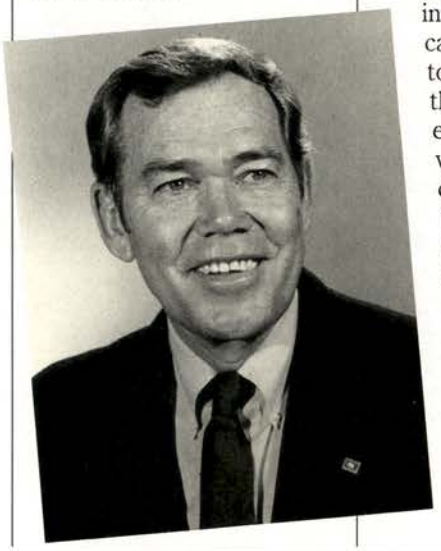
But Western Farmers and the people of Mooreland struck back. The power-supply co-op has a generating station and more than 40 employees within a few miles of the town, and the cooperative built on that ready-made support base with community events, fact sheets, bumper stickers and an ad campaign in the local weekly paper. An independent citizens group put up billboards and hundreds of signs calling for a "no" vote on the sale.

The campaign paid off on Election Day, when Mooreland's voters opted by better than two to one to keep the system in its consumers' hands. They also voted strongly in favor of keeping Western Farmers Electric Cooperative as their wholesale supplier.

Consultant Lou Wilson with a newspaper ad she prepared for the co-op.

THOMAS WINS IN WYOMING

Craig Thomas has given up his job as manager of the Wyoming rural electric statewide organization to speak for all of the state's residents—in the U.S. House of Representatives.



Wyoming voters picked Thomas, a Republican state legislator from Casper, in a special election in late April. He fills the seat left vacant when Dick Cheney was named defense secretary.

Thomas and his Democratic opponent, state Sen. John Vinich, squared off in a furious, month-long campaign that proved to be less of a squeaker than most observers expected. Thomas wound up with 52 percent of the vote to Vinich's 43 percent. Rural electrics would have come out ahead either way, though. Vinich is a Wyoming alumnus of the Rural Electric Youth Tour.

GOOD FOR THE MONEY

The federal government may have been forced to write off many of its wide-ranging loans in recent years, but "the rural electric program has not contributed to that problem," a new NRECA analysis finds.

The report, which includes figures through the fiscal year that ended last September, shows that only two REA loans totaling less than $45,000 have resulted in foreclosures—and both of those write-offs came more than 40 years ago. Late payments represent less than 1.5 percent of the loans and guarantees REA has approved in the past 54 years.

Electric co-ops can take pride in that record, NRECA General Manager Bob Bergland says. "Rural electric systems have one of the best loan repayment records in the country. Not many industries could claim they haven't experienced a foreclosure in more than 40 years."

However, the analysis adds, rural electrics "have not entirely escaped the financial turmoil the electric utility industry has faced during the last 15 years." Power demands that grew at a slower pace than expected or wide-ranging problems with nuclear power plants pushed 12 of the REA's nearly 1,000 borrowers into default. Since the beginning of the new fiscal year last October 1, two of the defaulting systems have signed workout agreements with their creditors. Only two systems have filed for Chapter 11 bankruptcy protections.

Nonetheless, the report shows, none of the loans have been written off.

ANNIE GRIFFITHS BELT

POPULATION DRAIN

The two members of the 1986 high school graduating class in Almont, N.D., stand as a symbol of the rural population drain. The U.S. Senate last month organized a Rural Development Task Force in hopes of plugging it with jobs.

JOB COUNT

Sulphur Springs Valley Electric Cooperative in Willcox, Arizona, hopes that if it can tell prospective businesses all about the type of labor force available in the area, it can help persuade them to relocate to sparsely populated southeast Arizona.

With that in mind, the co-op enclosed a "labor availability" survey with its February electric bills. The survey, developed with the help of the University of Arizona Cooperative Extension Service and economic development officials in Cochise County, seeks to find out how many people are looking for new or better jobs, what jobs they can do, how much they would like to be paid and how far they would travel to get to work.

Many businesses that are considering a move to the area ask about the labor force, says Sulphur Springs Valley member services and communications manager Wayne E. Crane. Now, instead of simply telling businesses that the area has plenty of people, officials can quote the numbers.

"Anything that adds to the total demographic picture of a community is important, particularly if you see openings in categories," says Dan Kamerman, NRECA's manager of economic development. Yet, he warns, communities have to be cautious about the incentives they use and the money they spend trying to bring in outside industries.

There are about 17,000 economic development organizations in the country, he says, all competing for a "couple of hundred" relocating businesses. Often, economic development representatives "give away the community as an inducement," he says.

Instead, community developers should look beyond the "quick fix" and realize that attracting industry is only a part of economic development, Kamerman says.

RUBBER GLOVES AND CORONA

Jim Watson, general superintendent at Navopache Electric Cooperative, Inc. in Lakeside, Arizona, says he has found further evidence of the gradual breakdown of natural rubber gloves that linemen use for hot-line work, evidence he hopes to use to convince manufacturers to make a synthetic rubber glove.

In our June 1987 issue, Watson said that corona cutting, in which the ionization of the air around a hot line produces a pattern of cracks in the gloves, was beginning not long after Navopache linemen started using the gloves.

Now, Navopache has found a similar problem at seven randomly selected New Mexico cooperatives that use natural rubber gloves on 14.4-kilovolt hot-line work. In testing four different brands of rubber gloves at 20 kV and 30 kV, Navopache found that most of the gloves started showing cuts within five minutes.

In fact, says Watson, some of the gloves actually started the corona cutting process in as little as 30 seconds.

Five of the seven co-ops were originally skeptical about the breakdown of their gloves, Watson says, but they "could not believe their eyes" when the tests showed the cutting.

The answer to the problem, Watson believes, is the more expensive synthetic rubber gloves. Manufacturers are reluctant to make the gloves, he says, because they're not sure there would be a market. If co-ops can offer proof of corona cutting, maybe the rubber glove industry will make a synthetic glove, he says.

More and more co-ops are using gloves on hot-line work because it is more efficient and economical than hot-stick work, Watson says, and because consumers are becoming more impatient with power cutoffs that would allow linemen to work on a dead line.

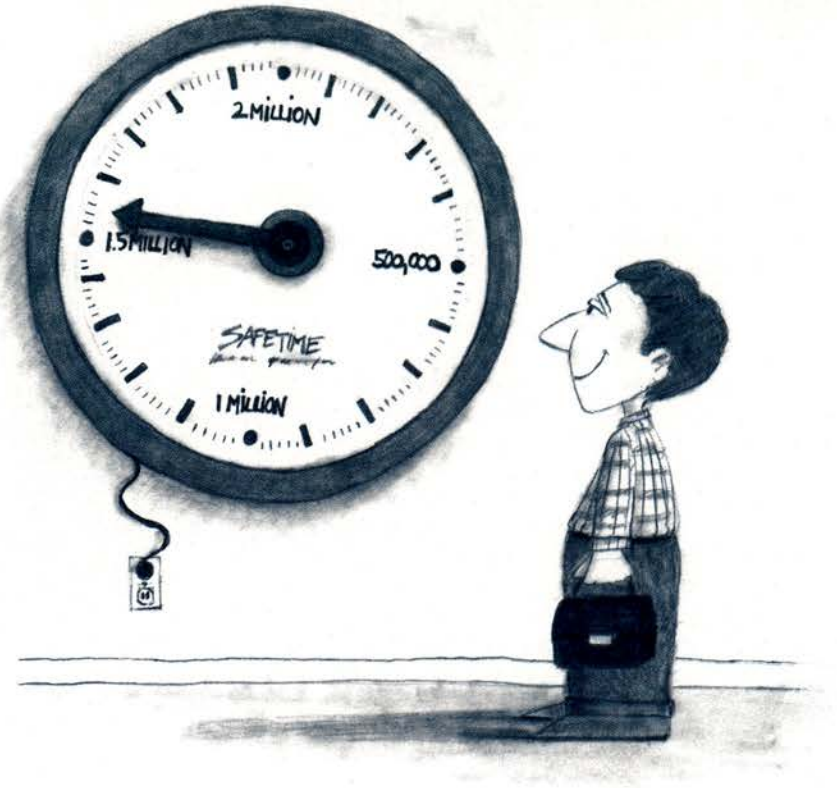
Watson explains that it is probably not the man on the pole who will get hurt if his gloves fail him. But someone below—when the man above drops a hot line after receiving a shock through a crack in his rubber gloves—is likely to suffer.

If a utility would like to test its own rubber gloves, Watson suggests the following procedure:

Using any insulated bucket truck, have a lineman go aloft and grasp one conductor of a single or three-phase 14.4-kV line to ground. Hold the conductor with either hand for one-minute time increments. Each time, back out of the hot area and check the glove for the beginning of deterioration, which usually starts to show at the base of the fingers or thumb.

Watson says that, at one-minute segments, the glove will not cut enough to hurt anyone.

JIM PATTERSON



PLAYING IT SAFE

One measure of safety is the number of work hours a co-op has logged since the last accident that caused an employee to miss work. Three rural electric co-ops, as of the end of last year, have recorded more than one million hours of accident-free work.

At the top is Linn County Rural Electrification Association in Marion, Iowa, with 1,535,294 hours. Manager Kim R. Colberg says that both the outside and indoor employees have a lot of pride in the record: "No one wants to be the first one" to have an accident, he says.

In fact, some employees will make an effort to come into the office even if they've turned an ankle, he says.

Linn County recently completed NRECA's safety accreditation process for the first time. "That's been good for us despite our record because it's made everybody rethink safety," Colberg says.

The co-op with the second highest number of hours is McLeod Cooperative Power Association in Glencoe, Minn., with 1,181,484 hours. Manager Bernard Janowski notes that on top of regular safety training, the 5,000-member co-op sponsors annual lectures by the state highway patrol about defensive driving and a yearly safety banquet and employee recognition dinner.

Two other contributing factors to the co-op's success are the low turnover rate in linemen jobs and a board of directors that is especially interested in safety.

Janowski says he has always told employees that he's more concerned about the pain and suffering that goes with an accident than he is about the numbers. "If we lose somebody, that's the real bad news," he says. This summer, the co-op will mark 20 years of work without a serious accident.

The other co-ops with remarkable safety records are: York Electric Cooperative, of York, S.C., also over the one-million mark with 1,112,888 hours; Berkeley Electric Cooperative, Moncks Corner, S.C., 851,471 hours; Clark Rural Electric Co-op, Winchester, Ky., 713,674 hours; Sac County Rural Electric Co-op, Sac City, Iowa, 673,919 hours; San Bernard Electric Co-op, Bellville, Tex., 635,728 hours; Lyon Rural Electric Co-op, Rock Rapids, Iowa, 622,269 hours; Rusk County Electric Co-op, Henderson, Tex., 597,387 hours; and Maquoketa Valley Rural Electric Co-op, Anamosa, Iowa, 540,527 hours.

THE OIL SPILL TRICKLES DOWN

The millions of gallons of oil that have fouled the waters of Alaska's Prince William Sound since March also cloud the future for Copper Valley Electric Association.

Copper Valley Electric serves the four fish-processing plants in Valdez, Manager Doug Bursey explains, but the plants were closed for weeks following the March 24 shipping accident that spilled more than 10 million gallons of oil into the sea. No one could say when the plants would be able to reopen.

Losing the herring season, which normally runs the month of April, cost the co-op $40,000, Bursey says. "That may not sound like a whole lot, but it's substantial when you look at a total margin of $600,000."

Bursey adds that the situation could get much worse, though, if the summer-long salmon season is canceled or seriously shortened. "We'd wind up losing in the neighborhood of $200,000 to $250,000. It could represent close to half our margin for the year."

Cleanup crews, scientists, reporters and the just plain curious doubled the population of Valdez, Bursey says, but the temporary load gains can't come close to offsetting the long-term losses. And the experts couldn't tell Bursey how long that long term would be.

"No one knows exactly what's going to happen," he says. "About the only thing they're saying is they're taking it one day at a time."

Based 115 miles north of Valdez in Glennallen, Copper Valley Electric serves about 1,900 consumers.

HEAVENLY LIGHT

For more than 150 years, the Allgood Methodist Church in Paulding County, Georgia, was illuminated only by the sunlight that filtered through its windows.

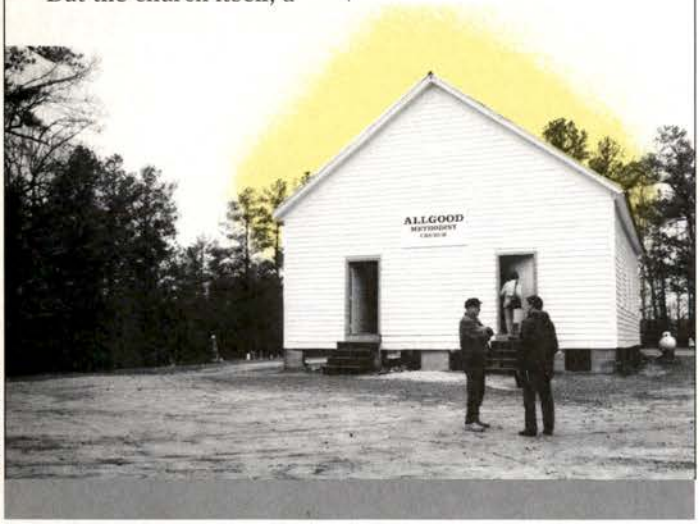
Then late this winter, Carroll EMC, the co-op that serves the rural area southwest of Atlanta, extended a line three-tenths of a mile so the church could have six ceiling lights.

Over the years, as the farmland surrounding the church was abandoned and people moved away, the congregation dwindled until the church no longer held regular services. Descendents of the church's early congregants would tend the 350-grave cemetery behind the church and gather every fourth Sunday in August for a homecoming.

But the church itself, a one-room wood frame building, was falling apart. Recently, though, local descendents, including Lawrence Bell, the great-great-great grandson of church founder William Allgood, have started to restore the church and meet once a month for Sunday afternoon services.

There are no paved roads within a mile and a half of the church, says Bell, chairman of the church's board of trustees. But that isolation may soon change. An 800-acre reservoir has been proposed for nearby land. The water is supposed to come all the way up to the front door of the church, says Lane Hudson, manager of member services for Carroll EMC.

"It would give the church one of the most beautiful views in western Georgia," he says.



CARROLL EMC

NUCLEAR ON A FAST TRACK

New licensing procedures designed to cut nuclear plant construction and licensing times by half have cleared the Nuclear Regulatory Commission.

"We should be able to build a plant in six years or less," explains NRC Chairman Lando Zech.

Legislation is needed to fully simplify the system, but the NRC action is a big step toward the long-sought "one-stop" licensing process of new nuclear plants.

No new nuclear plants are in the works right now, but NRC staffers, utility representatives and industry analysts have said licensing reform is a prerequisite for getting the nuclear industry back on track.

NOT SO RURAL ANYMORE

Two rural electric statewide magazines are introducing name changes that drop references to "rural" and to the rural electric program. The editors say this should broaden the appeal of the publications among consumer-readers and advertisers.

In April, *Rural Kentuckian* became *Kentucky Living*, and last month, *AREA Magazine* was reborn as *Alabama Living*.

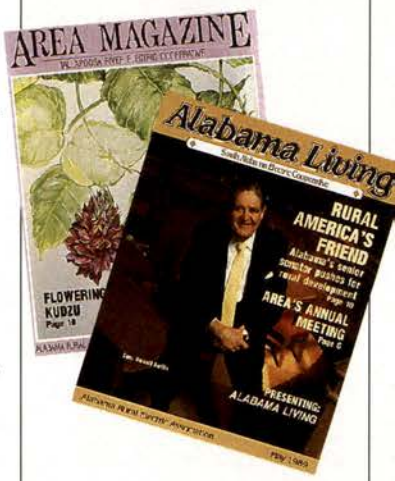
"At a time when we have a lot of readers who don't think of themselves as rural," says Gary Luhr, vice president for communications and member relations at the Kentucky statewide and editor of *Kentucky Living*, "we thought it was time to use a title that most readers can identify with.

"We've always told people, and I think we sincerely believe, that co-ops were organized not only to bring electric service, but to create a good quality of life," says Luhr. "I think *Kentucky Living* says that in so many words."

Even program insiders didn't know what the *AREA* in *AREA Magazine* meant. "The primary meaning is 'area coverage,' though it's been several years since we satisfied the area coverage principle," says statewide director of public relations and editor Darryl Gates. "Most employees assume it stands for the name of the association, and members think it ties into the REA.

"If you like living in Alabama, you'll like the new name," says Gates. "The problem with the old name is it doesn't bring up any mental image."

The two publications have gone through transformations similar to other statewide publications; beginning in the late 1940s as newsletters chock full of articles about the spread of rural electrification, they turned into feature maga-



zines, with the emphasis shifting from farm life to general rural lifestyle; inserts carried news about each local co-op.

Neither editor plans any shift away from the current mix of articles. "Rural issues are always high on our agenda and they'll continue to be," says Gates. But both expect to get a lot of mileage out of the new name.

"I want our magazine to be in the position that when [statewide manager] Dail Gibbs writes an editorial, people all over the state will pay attention," says Gates. "To do that you need reader support and reader loyalty. I think the name can help; it gives them a visual hook to hang onto."

Increased advertising dollars will give both magazines the means to improve their product at less cost to the members. "Our ad salespeople have told me for years that the name was an impediment to selling ads," says Luhr. "The name *Rural* rightly or wrongly gave an impression of the magazine and its readers as less sophisticated than urban dwellers. Perception is stronger than fact where they come in conflict."

SELLING LONG DISTANCE

Telemarketing firms, companies that conduct their business by telephone, are finding a niche in rural America.

With sophisticated new telephone services, computers that can talk to each other over the phone, computer hookups and fax machines able to reach even the most rural of areas, U.S. companies are coming to realize that they can save money and do a better job when they open up branch offices outside metropolitan areas.

"Telemarketing is one of our fastest growth industries, and it's one of our target industries," says Jack Bailey, executive director of the Iowa Area Development Group.

Telemarketing firms are finding a reliable, less expensive work force in the small towns of the Midwest, where workers often seek part-time jobs to help keep their family farms. The Midwest has the additional advantage of being in the middle of East and West Coast time zones, giving companies 11 potential business hours, says Bailey.

Sitel, Inc. for example, based in Omaha, Neb., has opened up 13 branch offices in small Midwest towns. President Matthew Gates says that his company, which sells insurance and credit cards by phone, was first contacted by an independent telephone company in Aurora, Neb.

Independent phone companies, he says, are looking for ways to "be good neighbors for the community and create job opportunities." In addition, they want to increase the volume of their business, he says.

When Sitel opened up a branch office in Brada, Iowa, it hired 43 local residents out of a population of 502. Similarly, says Jack Bailey, when MCI chose Sergeant Bluff, Iowa, for a new office, it said it would put some 800 people on the payroll. Sergeant Bluff has a population of about 2,500.

JIM PATTERSON

AND WHO IS TED TURNER?

Rural TV continues to grow. Jeff Almen, director of business development for the National Rural Telecommunications Cooperative, predicts that by the end of this month "well over 30,000" households will have signed up for Rural TV satellite programming.

Even during the traditionally slow last days of winter, more than 100 new subscribers signed up two days in a row, he says.

Subscribers like both the range of the programming and the fact that it is marketed by "people they know and trust" in the cooperatives, Almen says.

Some cooperatives are finding unusual ways to reach potential subscribers. Terry Wilhite, a communications specialist for Pioneer Electric Cooperative in Greenville, Ala., has a short chat with local radio personalities during a live, morning "drive time" call-in show several times a week.

"We chat about what's up there, what's coming up tonight" on the Rural TV system, Wilhite says. The 60-second segments get a "good reception," he says.

Pioneer has signed up some 950 Rural TV subscribers in a year of marketing satellite systems and programming. Some consumers are still a bit hesitant, Wilhite says. "People who've watched three television channels for 50 years can't believe they can get CNN," he says. "They ask, 'What's CNN?' "

HEALTH CARE COOPERATIVES

Decades of rural electric success suggest that the federal government should look into using co-ops to provide badly needed rural health services, a group of five powerful lawmakers contends.

"Cooperatives have long been used to deliver essential services to sparsely settled areas," they argue. "We believe that in many cases health care falls into the category of the types of services that cooperatives have traditionally organized to provide."

In their recent letter to Health and Human Services Secretary Louis Sullivan, the legislators point out that rural people as a whole suffer more frequent and more severe health problems than city dwellers, but often have less insurance coverage and fewer medical services available. Organizing cooperatives to provide the needed services may be the answer, the lawmakers declare.

The letter was signed by Sen. Quentin Burdick (D-N.D.) and Senate Republican Leader Robert Dole of Kansas, co-chairmen of the Senate Rural Health Caucus; Reps. Mike Synar (D-Okla.) and Thomas Tauke (R-Iowa), co-chairmen of the House Rural Health Care Coalition, and Rep. Ike Skelton (D-Mo.), chairman of the Congressional Rural Caucus.

Penta Poles

Safe & Effective

Despite superior performance for over 40 years, some utilities still don't specify penta-treated poles. They've been told that other wood preservatives are "safer" and that penta may be banned or its use limited. These rumors just aren't supported by the facts. After 10 years of environmental and regulatory review of penta and other wood preservatives, **the EPA neither banned the manufacture of penta nor significantly restricted its major use as a wood preservative for utility poles.**

In fact, studies show that when manufactured and used according to existing EPA regulations, penta is the safest and most effective wood preservative on the market. Penta-treated utility poles typically last up to 40 years. They also have earned a reputation for being clean, bleed-free and easy to climb. Maybe that's why more poles are still treated with penta than all other preservatives combined—in spite of the "rumors." The continued popularity of penta is further demonstrated by an EPA study which estimates that if penta treatment of utility poles, construction pilings, and certain types of lumber, timber and plywood were to cease, the cost to our economy would be from $46,000,000 to $57,000,000 in the first year alone.

Clearly, penta is an important product. As the only U.S. producer of penta, Vulcan Chemicals will continue the levels of production and service that our customers have come to depend on.

You've probably already heard the news about the superior performance of penta. And the environmental news—all rumors aside—is good news, too. If you need additional information about penta, call us at 1-800-633-8280. Because we're not only committed to the responsible production of effective chemicals, but also to setting the record straight.

Vulcan CHEMICALS

CHEMICAL PRODUCT RESPONSIBILITY

Managing
CLIMBING TO YOUR GOALS

By Ken Blanchard

Dear Dr. Blanchard: As part of a new management program, we've established One Minute Goals for all our employees. While our employees are intensely involved with this process, several department supervisors have told me that they get the impression that some people really don't seem to agree with the goals that were set and are just giving lip service to the entire One Minute Management concept. How can we convince them we're really serious about this program?—MLN.

Dear MLN: Setting goals with your people is the beginning of a journey, not the destination. Having One Minute Goals does not mean that your management problems will disappear or that things will run more smoothly.

The journey from start to effective implementation of the goals is something you must manage. Don't expect too much too soon. And remember, anything worth doing does not have to be done perfectly at first.

The question of whether your people agree with the goals you've settled upon is important. Initially, people will be cautious and try to determine just how honest they can be with you. If you behave as do many other managers, you've probably started a number of other management programs in the past. You have half-heartedly stuck with them and have achieved limited success. Generally though, these programs have been allowed to peter out because of disinterest or because they didn't provide a quick cure.

Employees won't give their commitment to a new program until they are sure you're really serious about it. Why should they jump in and become actively identified with and involved in a program when they are unsure whether you're going to stick with it? They're not going to disagree with you, but neither are they going to be gung ho about a program unless they know you really plan to carry it out.

Bosses and their employees are always feeling each other out, and this is one of the areas they focus on.

Also, I suspect your people are probably wondering whether you are going to use these goals to catch them doing things correctly or incorrectly. One of the complaints I hear about Management by Objective is that it provides managers with a convenient mechanism to beat on people.

Without goals, managers had to be pretty creative to decide how they were going to rate people when it came time for a performance review. However, with Management by Objective, it's easy to rank people, and to rate them at the low end of the spectrum. No doubt some of the people in your organization think you're using One Minute Management as a method of doing some negative scoring on performance reviews.

To show that you're sincere about this program, you must practice it. You and your department supervisors must behave like One Minute Managers, which involves giving lots of praise and, in the alternative, reprimands when necessary. Remember, you can't sit back and return to your former management methods and expect results.

Make a commitment to live with your new management program. It will probably take a year or two before everyone is "on board." The real test is not with your people but with you. You must have the commitment and willingness to make it work. There will be some rough spots and initially people will be confused, as you've noted. However, in the long run, the program will work if you remain faithful to it and want it to work. ●

Management consultant Ken Blanchard is the author of the best-selling book The One Minute Manager.

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"It was like being in Russia...

STARTING OVER

By John Vanvig

Coosa Valley Electric Cooperative turns 50 in fine form this year, but the scars of its mid-life crisis three years ago still show.

Pride and amazement at the co-op's remarkable recovery mix in equal parts these days when the shattering experience comes up in conversations with members who overcame it, employees who endured it and the manager who inherited it. But talk with them for a while, and a certain wariness creeps into the conversation, too.

"Regardless of how hard we work, we've still got the bones in the closet, calling out to us," says Leland Fuller, the office manager still haunted by memories of the upheaval. "It keeps us on our toes."

They weren't on their toes, though, as recently as five years ago. Looking back, employees can only shake their heads at the way a cozy little rural electric system missed all the warning signs.

Coosa Valley Electric serves about 8,500 members in the back country around Talladega, a sleepy southern town in north-central Alabama. Except for a handful of retirees, most folks on the lines have known one another all their lives, and their co-op was like a member of that extended family. It was a system with a personality all its own, and its members treated it like an eccentric relative, accepting and forgiving its foibles, praising its occasional triumphs.

"For many years, the thing was run as a family operation," says Sam Head, Coosa Valley's manager of less than three years. "Kind of a mom-and-pop affair, not very businesslike. But they got the job done.

"If they were asked what's good service, they would have said getting the lights back on. Now, the fact that the lights were out more than they should have been, they probably didn't define that as bad service."

Two-year work plans—wishful thinking, really—gathered dust in the co-op offices and grew steadily thicker as uncompleted, even unstarted, projects from one plan were simply added to each new one. Badly overloaded lines sagged and snapped.

Other factors beyond Coosa Valley's control tugged and tore at the fraying fabric of the failing co-op: A decade-old agreement with a small town in the co-op's service was dredged up by angry consumers. It looked like a sweetheart deal—lower rates for residents of the town—because no one had bothered to explain to the Coosa Valley Electric membership that the town load kept everybody's rates lower than they would be without it.

Coosa Valley's generation and transmission co-op, Alabama Electric Cooperative, bought its electricity from Alabama Power Company, and the markup the G&T needed enraged a handful of members who, again, were left in the dark about why the investor-owned utility's rates were lower.

When the Reagan revolution blew through Talladega, the editor of the local newspaper, the *Daily Home*, launched an attack on consumer-owned utilities with poison-pen coverage of Coosa Valley Electric.

"If I had been a member of the co-op taking power, I probably would have been critical of some of the things going on here," Head concedes. But the fury that engulfed Coosa Valley still astonishes him. "This thing got real nasty. It's a wonder to me that someone didn't get hurt."

Head arrived after the worst was over. True, no blood was spilled (as far as anyone knows). But there are other kinds of hurt.

At the annual meeting in October 1984, an angry band of Coosa Valley members calling themselves the Concerned Citizens Committee overthrew the folksy board that had run the co-op for years. The group campaigned and won on the promise of lowering rates, and they swore that if they couldn't bring monthly bills down they'd bring

this damn thing was war, mental

the co-op down instead.

A series of setbacks soon began to feed the rogue board's rage. Its attempts to pull out of Alabama Electric Cooperative were rebuffed in court, and a special membership meeting rejected the board's vote to dissolve Coosa Valley Electric. Thwarted in its efforts to destroy the co-op through channels, the board took a meaner route: degrading the system's service—by firing essential employees and cutting valuable programs—and filing for bankruptcy.

Meanwhile, another member group had sprung up to challenge the Concerned Citizens' grip on the board. The formation of the Save Our Co-op Committee was a welcome development, but in that volatile situation all disagreements quickly turned bitter. When Save Our Co-op members enlisted the help of the Alabama statewide and the power-supply co-op, the Concerned Citizens branded them "puppets" and "stooges" in letters and quotes that played prominently in the pages of the *Daily Home*.

"It was like being in Russia," Fuller says. "This damn thing was war, mentally, emotionally and physically. It was just intimidation."

The circle of hurt spread wider. The new board was in office only a few weeks when it precipitously fired member services director Don Brannon, a 20-year employee. Brannon learned of his dismissal when he read about it in the paper. Odd jobs and construction work kept food on his family's table, but the mortgage company got his home.

As the board cut more and more corners, service steadily declined. Line crew foreman Howard Cooley was a lineman then. He boasts now that he was "here for the duration," but he also admits there were times back then when he wished he wasn't. For one thing, endless repairs on decaying lines kept the crews constantly on the run, and still they fell further and further behind.

"I never saw my kids; I was in the woods all the time," Cooley recalls.

Left: Manager Sam Head drops by the front office of the co-op. Right: Head and Leland Fuller (center) on member Don Alberti's (right) farm. Far right: Line crew foreman Howard Cooley remembers a time when he'd leave his co-op hat in the truck when he went into town for lunch.

But it was worse when they went into town. "We'd take off our caps and leave 'em in the truck. You didn't want nobody to know you worked for the co-op or you'd end up in a fight."

The same thing happened to Brannon, known to neighbors and lifelong friends as a co-op man even though he no longer held his job there. "I got to where I even hated to go to church. People'd ask about it."

Fuller, then as now the co-op's office manager, was promoted after the rampaging board fired a manager just weeks before his scheduled retirement. Before Fuller in his turn was fired 18 months later, he took to calling the statewide from pay phones in the belief that his office and home phones were tapped. Someone poured sugar in his car's gas tank, and a load of horse manure was dumped in his carport.

The vandalism spread. Nails were strewn in people's driveways, mailboxes were demolished, car wiring systems were tampered with. And a punishing war of nerves began, as co-op employees and members found themselves shadowed by grim Concerned Citizens. Fuller remembers the vigil they kept over him.

"They were watching me, watching my house. I'd see them at church, at restaurants—I mean, it was crazy. They wanted me to know they were following me."

The incidents grew nastier. Gunfire raked the homes of people on both sides of the dispute. Shotgun blasts chipped brick facings, splintered doors, shattered car windows. No one was arrested, and no one was hurt. But Fuller doesn't think physical harm was the point. "It was more of a warning to back off. It was like burning a cross."

But through the tension, members and employees who had remained loyal to the co-op began to believe the battle was turning in their favor.

The Save Our Co-op Committee, with the support of the statewide and other rural electric systems in the state—and cheered by NRECA General Manager Bob Bergland, who said on a visit that "the eyes of the nation" were on Coosa Valley Electric—had by then mobilized an 11th-hour effort to rescue the co-op. Many in that committee had had complaints of their own about the co-op's service; one member, in fact, helped organize the Concerned Citizens and nominated two of the board members who turned so savage, so soon.

Coosa Valley employees started showing up at Save Our Co-op Committee meetings, where strategies were plotted to retake control of the system. The employees, Brannon says, figured they had nothing to lose because they were likely to lose their jobs anyway if

y emotionally and physically."

—Leland Fuller

the dissident board prevailed. Later, the employees staged a walkout that further paralyzed the co-op.

A special meeting in May 1986 gave the Save Our Co-op faction and their employee allies an opportunity to regain the system. They made the most of it, sneaking the night before into the Talladega auditorium where the meeting was to take place and stashing hidden bullhorns and a public address system so they'd be equipped to take over the gathering.

The committee recruited supporters by going door to door, learning in the process just how deep the enmity of some of their foes ran. But they enjoyed considerable success, as well, thanks in part to the fact that the Concerned Citizens had by now ranted themselves into a frenzy, denouncing the co-op in terms that grew harder and harder to believe.

"They'd always been lying," recalls co-op member Tony Barone, who took to the air on local television stations with guest editorials that helped stir co-op support. "But toward the end their lies were so ridiculous that even their own people wondered what was going on."

By the day of the meeting, the Save Our Co-op Committee was able to pack the auditorium. Loyalists numbered an estimated 800 of the 1,000 or so co-op members in attendance, and they quickly executed a putsch.

"When you have that type of majority, that's the way it's supposed to work," drawls Don Alberti, the retired Army colonel who assumed control after defeated board members left the meeting behind a phalanx of police.

But the work was far from over.

Assisted again by Alabama Electric, the statewide and NRECA, a board committed to the co-op idea began working its way out of the carnage. One of its first acts was to rehire Leland Fuller and Don Brannon, and they joined an interim manager—Ray Magee of Mississippi, winner last year of NRECA's prestigious Ellis Award—in moving quickly to get the co-op back in shape.

Co-ops from throughout Alabama and as far away as Florida responded to Coosa Valley's plea for help in repairing and replacing line. One Alabama co-op sent a crew in for five solid weeks of Coosa Valley work, while the Talladega co-op put the linemen up in members' and employees' homes and bought their meals.

A few months later, Sam Head was lured out of retirement in Memphis, and his management skills are widely credited with keeping the co-op afloat since then. He moved quickly to arrange alternate financing—REA assistance was out of the question until the misguided bankruptcy proceeding was disposed of—and he used the capital infusion to buy or lease used vehicles for the co-op's decimated fleet.

Emergency approval was granted for Coosa Valley members to begin receiving the statewide organization's *AREA Magazine*, and Head launched a series of personal calls on disgruntled members to make peace. One stop was at the office of the editor of the *Daily Home*.

"I tried to persuade him that there's a place for co-ops," Head says. "I don't think I won him over, but we parted friends." More important, he says, is that Coosa Valley isn't splashed all over the paper's pages any more.

Head instituted procedures that helped the new board keep control of its meetings, requiring angry members to secure a place on meeting agendas in advance and limiting the size of delegations allowed in the meeting room.

Most of all, Head preached service.

Today, he proudly pats a thick binder that represents the first work plan completed in decades. "There's been more work done in the last two years—more wire put in the air, more poles put in the ground—than there had been in the 35 or 40 years before," he says. And he means to keep it up.

"We've got the key right here: service," Head says. "How are you going to inflame people when they're being served?"

The crews remain busy, but these days they're installing new equipment and upgrading lines instead of restoring service that never should have failed.

(Continued on page 38)

PHOTOGRAPHS BY ED C. THOMPSON

THE ROBOTS ARE COMING!

They probably won't take your job, but they could be your helper

By Joseph Anthony

The robots are coming! The robots are coming!

Well, sort of.

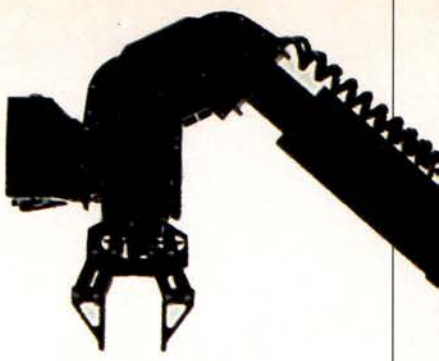
Robots have become familiar sights in many industries during the 1980s, performing repetitious assembly-line tasks for manufacturers of automobiles, electronics and other mass-produced consumer goods. Now, the robotics industry is accelerating the design and marketing of other kinds of robots.

Robots that climb walls. Robots that dive through 500 feet of water. Robots that crawl through pipes. Robots that eat sludge. Robots that dance along transmission lines.

They go by names like Tomcat and Cecil and Rover and Snake and Scavenger. They could, eventually, be routinely used by utilities for tasks as diverse as cleaning and inspecting cooling water tanks, maintaining overhead transmission lines, and repairing pipes and boiler tubes.

Most of these and other robots look nothing like the humanoid metal and plastic creations of science fiction writers and filmmakers. They don't resemble the human form in any way, or even have what we would call a head. Instead, they look like what they are: industrial machines.

"They're very sophisticated devices," says Floyd Gelhaus, program manager for nuclear engineering and operations at the Electric Power Research Institute (EPRI) in Palo Alto, Calif. "A robot can be an arm with specialized tools attached to the end of it for doing line repairs, or two pieces of machinery hooked together by an expandable member for crawling through pipes, or whatever design is best for accomplishing the task at hand." As Gelhaus talks, the air in his office is circulated by a small fan with robot-like arms and two red lights for "eyes."



In some ways, robots are just a simple extension of the everyday technology already used by utilities. "The industry has been using robotic devices—bucket trucks—for 25 years, but never thought of them as such," says Harry Roman, principal engineer with Public Service Electric & Gas Company in Newark, N.J. "Bucket trucks are like robots on wheels: the boom is the manipulator, and the so-called 'tool' at the end of it is a human being."

Roman's bucket-truck analogy is appropriate. Linemen today have to perch on towers or work from bucket trucks, use hot sticks, wear protective suits and gingerly plan and execute every move when doing maintenance work on live lines. Even with all their equipment, they can't work on live lines in thunderstorms or high winds.

Ideally, instead of working directly on high-voltage transmission lines, a lineman could make repairs from the ground, manipulating a robotic arm at the end of a boom. Work could be done safely in any weather without an interruption of power.

That's exactly what one robot under development is designed to do. Called Tomcat (Teleoperator for Operations Maintenance and Construction using Advanced Technology), this robot arm can grip with up to 200 pounds of force, lift objects weighing more than 50 pounds, and be used to install and remove dampers and change out the insulators on an energized overhead line. The lineman, dry and safe in the

truck, controls the arm with the help of two cameras mounted on the manipulator (the robot) and two TV monitors at his console.

Tomcat was developed by a team led by EPRI that is now evaluating proposals for manufacturing a commercial version of the robot. Purists like Richard Kennon, EPRI's program manager for overhead transmission lines, says a tool like the Tomcat is closer to being a tele-operated system than a robot since it doesn't have any built-in "intelligence;" its every move is dictated by the human operator below. But Kennon and others agree that whatever you call them, devices like Tomcat will change the way utilities operate.

"This could eliminate the problem of having to decide whether to take the line out of service and disrupt electricity to customers," Kennon notes. "The utility's ability to handle maintenance without affecting service would improve measurably.

"Robots could also allow co-ops to take full advantage of compaction; they could place their lines closer to poles and just 5 feet apart instead of 15, because they wouldn't have to worry about having adequate clearances for people working up there," Kennon adds.

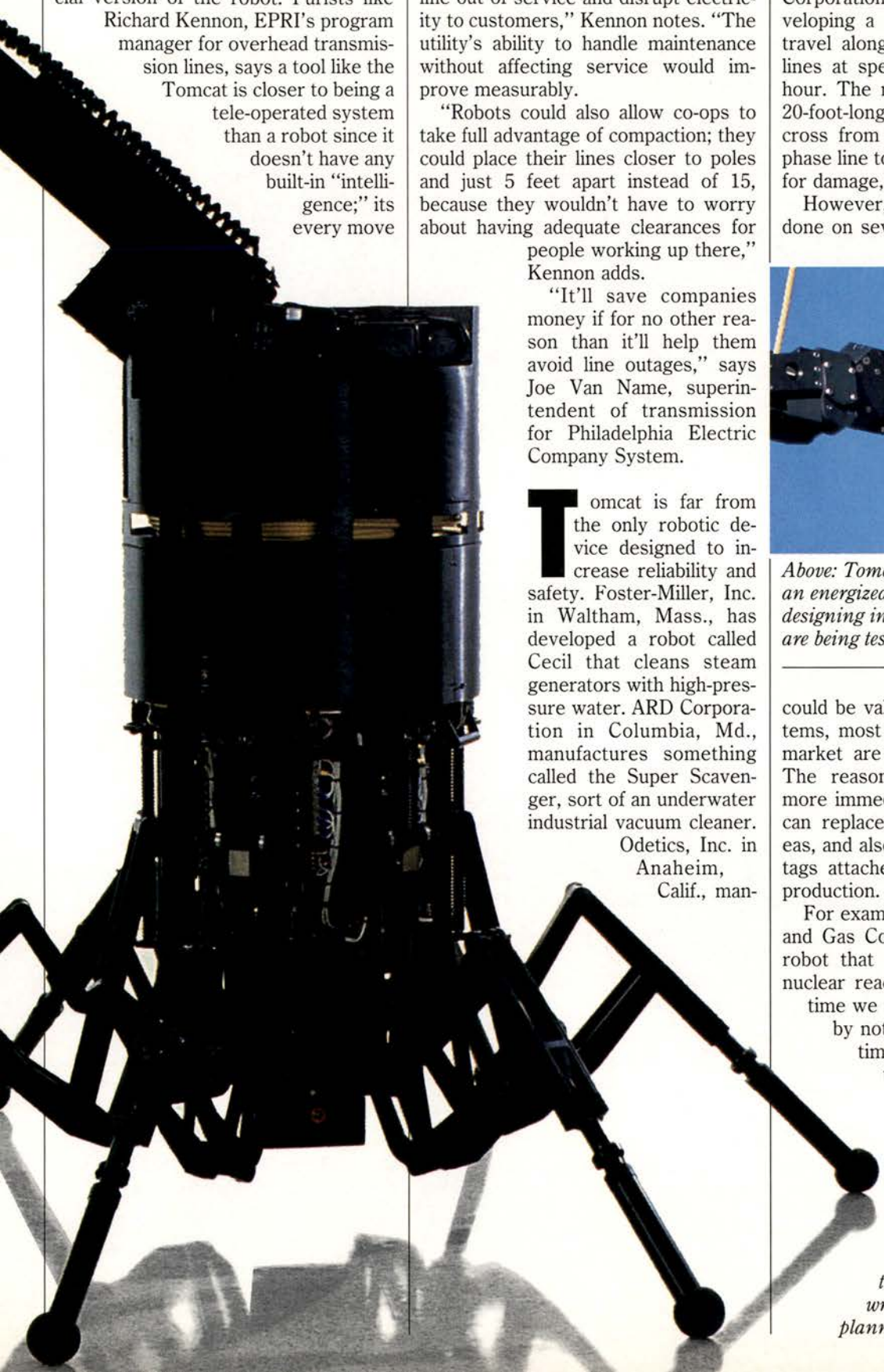
"It'll save companies money if for no other reason than it'll help them avoid line outages," says Joe Van Name, superintendent of transmission for Philadelphia Electric Company System.

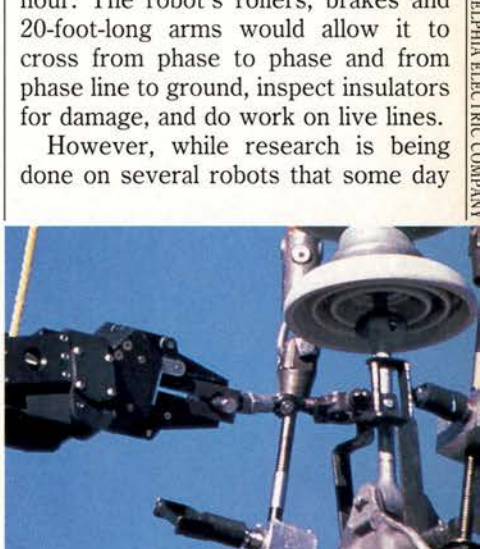
Tomcat is far from the only robotic device designed to increase reliability and safety. Foster-Miller, Inc. in Waltham, Mass., has developed a robot called Cecil that cleans steam generators with high-pressure water. ARD Corporation in Columbia, Md., manufactures something called the Super Scavenger, sort of an underwater industrial vacuum cleaner. Odetics, Inc. in Anaheim, Calif., manufactures walking machines that can be used in contaminated areas of nuclear power plants and other hazardous areas. PLS International in Cleveland makes robots that can inspect the insides of pipes. The Tennessee Valley Authority and Transitions Research Corporation of Danbury, Conn., are developing a robot that will be able to travel along and inspect transmission lines at speeds of up to 20 miles an hour. The robot's rollers, brakes and 20-foot-long arms would allow it to cross from phase to phase and from phase line to ground, inspect insulators for damage, and do work on live lines.

However, while research is being done on several robots that some day could be valuable to rural electric systems, most of the robots now on the market are geared to nuclear plants. The reason: Nuclear plants have a more immediate need for devices that can replace humans in hazardous areas, and also can afford the hefty price tags attached to most robots now in production.

For example, Public Service Electric and Gas Company paid $54,000 for a robot that could inspect the utility's nuclear reactor vessel. "But the first time we used it, we saved $500,000 by not having to have any downtime, and $135,000 in radiation protection costs," says PSE&G's Roman. Nuclear power plants are more uniform in design than plants us-

(Continued on page 38)





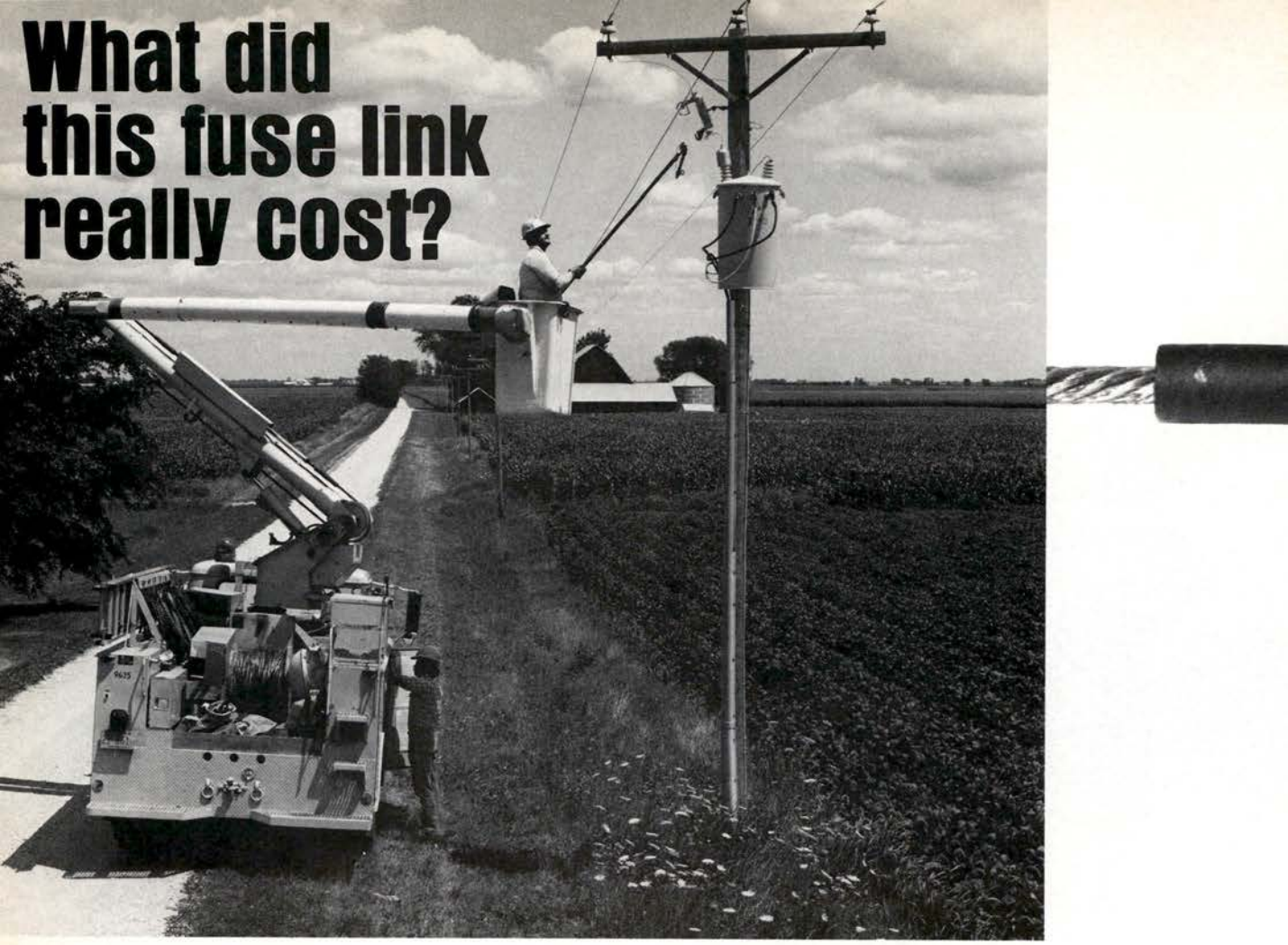
PHILADELPHIA ELECTRIC COMPANY

Above: Tomcat, a robotic lineman, grips an energized line. Left: Odetics, Inc. is designing insect-like walking robots that are being tested for use by utilities.

ODETICS, INC.

Joseph Anthony writes on business and social trends from Los Angeles. He wrote about corporate strategic planning in the March '89 issue.

What did this fuse link really cost?



The outage report read "Fuse link blown—cause unknown."

Sure, there's nothing obvious such as a downed line or a failed transformer . . . and the last storm was a couple of days ago.

But maybe the link was damaged by surge currents or by aging or vibration. So it couldn't even handle normal load fluctuations. The result? The utility had to pay for a line crew and truck to travel out and replace a link that blew for no good reason.

They could have avoided this trip by using S&C Positrol® Fuse Links—the fuse links that don't blow without a good reason. They eliminate unnecessary blowings . . . save operating dollars . . . and improve service.

S&C Positrol Fuse Links are uniquely nondamageable and permanently accurate.

Positrol Fuse Links are not affected by aging, vibration, or surges that heat the element nearly to the severing point—they are nondamageable, so they operate only when they should, not when they shouldn't . . . they will not "sneak out".

Nondamageability eliminates the need for "safety zones" or "setback allowances", permitting close fusing without the fear that changes in time-current characteristics (TCCs) will cause troublesome departures from your carefully orchestrated protection and coordination schemes. The enduring permanency of Positrol TCCs has been repeatedly demonstrated by exhaustive testing with surge-sequence profiles typical of those which would be experienced during the service life of a fuse link.

And they have exceptionally tight tolerances. . . typically half those of other fuse links. . . which means they can be counted on to clear faults predictably faster. These tight tolerances, combined with the nondamageability, allow you to choose a minimum-size link for each application, ensuring maximum protection and enhanced coordination. You even gain the flexibility to coordinate adjacent ampere ratings.

Attention to small details makes a big difference in performance.

The superb performance characteristics of Positrol Fuse Links are the result of uncompromising design, plus diligent attention to manufacturing details.

The fusible elements of silver, silver-copper eutectic, and nickel-chrome (determined by rating) are

Typical S&C Positrol Fuse Link

inherently nondamageable. Wire materials . . . of carefully checked purity and conductivity . . . are drawn through precision dies to exact cross sections confirmed by laser micrometer. And painstaking assembly ensures no nicks, no kinks, no necking down that might compromise TCC accuracy.

Their interrupting performance has been proved in all types of cutouts.

Essentially, the ability of a cutout to interrupt low-magnitude fault currents—particularly transformer secondary-side faults with their severe transient recovery voltages (TRVs)—is determined by the fuse link . . . not the cutout.

Extensive full-scale testing through the full spectrum of secondary faults . . . with realistically severe TRVs . . . has proved the matchless performance of S&C Positrol Fuse Links whether applied in single-vented or double-vented cutouts. Positrol links, with their high-burst-strength filament-wound fiber-glass sheaths, reliably interrupt all levels of secondary-fault currents on systems through 27 kv, and on single-phase-to-neutral applications on systems through 38 kv.

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And no other fuse links are as easy to apply.

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Ignore the popular saying about not fixing things until they break

MAINTENANCE *pays you back*

By Wayne Beaty

Regular maintenance of rural electric distribution lines saves time, money and headaches, and reduces the number of those unscheduled outages that always seem to happen at the worst possible time.

What is the best way to avoid equipment failures? How frequently do you inspect the various components of a distribution system? How much can you afford to spend on a particular maintenance program?

The answers to these questions vary from co-op to co-op and region to region, but the most successful operations managers agree that their ability to deliver reliable, affordable electricity to consumers day in and day out comes down to the effectiveness of their maintenance programs.

Fast growing Cobb County EMC in Marietta, Ga., a suburb of Atlanta, has a lot of new equipment in place because of recent road widening projects. About 70 percent of the co-op's overhead lines are less than seven years old, according to Dwight Brown, vice president for engineering and operations. Still, Cobb has a contractor inspect about 2,000 of its older poles every year.

"We're finding that about 5 percent of these poles need to be replaced because of decay or damage," Brown says.

Because of the road-widening projects, and as part of a master plan, most of Cobb's small copper circuits have been replaced with larger aluminum conductors. Consequently, the total line loss is less than 7 percent.

Tree trimming at Cobb is done by eight crews operating on a six-year cycle. "We're looking at the possibility of cutting this cycle down to five years," Brown says.

Cobb EMC installed its first underground distribution lines in 1973 and, like most electric utilities, has a serious corrosion problem with concentric neutral-type cable. A contractor is used to test cables for neutral corrosion and the bad cable is replaced.

Padmounted transformers and switchgear are inspected and painted inside and out on a regular basis.

SCADA systems are used at 22 Cobb substations. "Anytime a circuit breaker trips, we ride out that circuit to the next safety protection device," Brown notes. "We do our own maintenance on voltage regulators and oil circuit reclosers on a cyclical basis."

Choptank Electric Co-op in Denton, Md., put in a lot of underground distribution cable, which is now being replaced as it fails with EPR-insulated (ethelene propylene) cable, which has a jacketed cover over the concentric neutral. "One of our biggest problems is with rusting padmounted cabinets," says Fred Hubbard, manager of operations. "If they happen to get scratched during installation, we've seen severe rusting within two weeks." Hubbard is outfitting a truck with sandblasting equipment and repainting rusted cabinets on a routine basis.

Hubbard says that one of the keys to maintaining the co-op's overhead lines is having a professional forester on staff to manage tree trimming.

Dick Watson, maintenance supervisor at Anoka Electric Cooperative, in Anoka, Minn., is responsible for keeping up a system of 3,400 miles of overhead lines and 2,000 miles of underground lines in Minneapolis's northwestern suburbs. "We inspect 10 percent of our 80,000 poles each year

and we're finding that, on average, about 4 percent of our poles are bad," he says. "We did have one area in which the poles were older than normal and were in sandy soil and the rejects reached 18 percent."

A former lineman and three part-time helpers visually inspect the entire overhead system once a year. When the inspector spots a rusted transformer it is brought into the shop for repair and/or repainting.

Anoka has about 500 oil circuit reclosers that are inspected on a three-year cycle or when one of them has been operated 50 or more times. Watson points out, "We have computerized the maintenance records for OCRs and some other key facilities in order to help us keep track of our maintenance data.

"Our underground system is inspected on a five-year cycle except for the live-front padmounted gear, which is inspected every three years, and for three-phase padmounted transformers, which we visually inspect every four years and look for cracked bases, vehicle damage, leaking bushings, swollen elbows, dirt accumulation, etc."

In 1984, Anoka Electric started keeping accurate records of all failures on its underground system. So far, about 760 primary cable insulation failures have been recorded.

The co-op uses the MOV (metal oxide varistor) arresters at all overhead terminations and uses an elbow arrestor at all open points in the underground circuit as well as at the end of radial underground circuits.

Henderson-Union RECC in Henderson, Tenn., has a meter testing maintenance program that boosts the number of accurate, reliable meters on its lines.

Kelly Nuckols, the co-op's manager of engineering, says, "We are the second utility in the state to adopt a sample meter testing program that meets or exceeds the ANSI [American National Standards Institute] standards and we have been doing this for the past 10 years."

Other maintenance programs at Henderson-Union include computerized recording of the number of operations on reclosers and relays. Data are also gathered on the maintenance histories of regulators, substation transformers and other equipment.

"We also use radio-equipped helicopters to patrol transmission lines and look for such things as broken insulators, broken crossarms, poles, clearances, broken ground wires, etc.," Nuckols says.

Replacing an oil circuit recloser on a line owned by Guadalupe Valley EC in Gonzales, Tex.

Maintenance programs that reduce line losses are a major objective at Henderson-Union. "Our two-year work plan includes a goal of cutting line losses by 1 percent from the present 7.3 percent," Nuckols says. "We will do this through such things as reconductoring circuits with larger conductors and replacing older, high-loss transformers."

The co-op has reduced the amount of maintenance required on underground cable by installing both primary and secondary cable in conduit. If a cable fails it can be pulled out without any excavation.

East Central Electric Association in Braham, Minn., is one of the older rural electric systems in the country; Minnesota's first, it was organized in 1937. Most of its lines and substations were built in the 1940s and 1950s.

"We inspect our poles on a 10-year cycle and find that about 7 to 8 percent need replacing. Our two-year work plan includes rebuilding key circuits," says operations manager Paul Gelhorn.

"Meters," Gelhorn adds, "are inspected on an eight-year cycle. We also have an idle service list that we review periodically. We will write a letter to the consumer to determine the status of the service and remove those services that have been inactive for five years."

Gelhorn points out that he has been keeping in close touch with Wisconsin Power & Light engineers, who have been conducting a study of paints used on padmounted cabinets to minimize rusting problems. More study is needed, according to Gelhorn, to determine the precise cost/benefits ratio of new paints.

Federated REA at Jackson, Minn., like many other rural electric systems, uses infrared camera techniques to detect hot spots (and thus potential trouble spots) on its system.

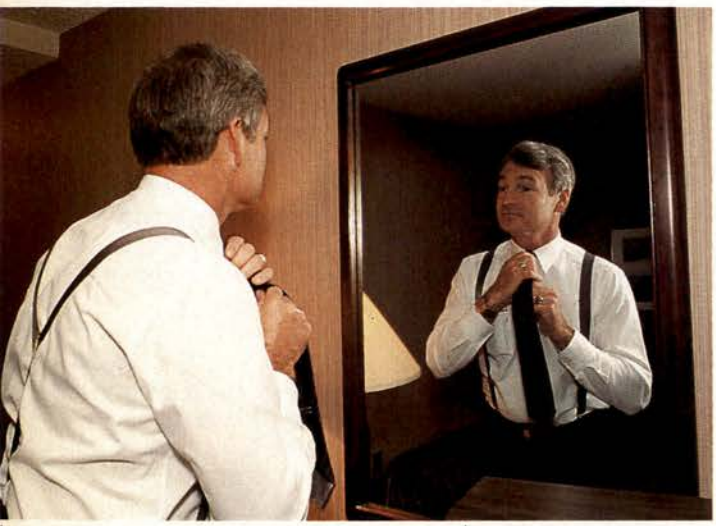
"In time, we will open every padmounted transformer and switchgear to look for overheated elbows, connectors, exposed neutrals, broken bushings, dirt accumulation, etc.," says Joe Wieskus, director of operations.

Inspectors ride out and visually inspect overhead circuits annually and keep a maintenance log of broken insulators, frayed conductors, tree problems and line clearance problems that are then factored into Federated's line maintenance program.

Wieskus points out, "One other item that needs a proper maintenance program is load management control receivers. We inspect about 25 percent of our receivers each year so that our load management program functions properly."

All of these maintenance programs contribute to delivering electricity to consumers that is reliable and affordable. Successful operations managers recognize that the old saying, "If it ain't broke, don't fix it," doesn't apply to them. Predicting when a component will break, and fixing it before it does, is the secret to success. ●

VISITORS FROM HOME



NRECA's volunteer advocates get Congress's attention

By John Vanvig

There are about 10,000 registered lobbyists in Washington, D.C., many of them with six-figure salaries. But members of Congress say the people who get their attention faster than anyone else are the folks from back home—people like Jim Bedford.

Bedford, a director of Duck River EMC in Shelbyville, Tenn., was one of 3,000 rural electric leaders who visited the capital the first week of May to take part in NRECA's annual Legislative Conference.

To Bedford, delivering the rural electric message to a representative or a senator is an expression of rural self-reliance. "If rural people don't present their issues," Bedford figures, "who will?"

Who will, indeed? Bob Bergland, NRECA's general manager and a former U.S. representative, recalls the squads of professional lobbyists that were always turning up in his congressional office. Those deputations, he said at the outset of the conference, claimed to represent one vital interest or another—but Bergland said their pitch paled next to that of the home folks.

"These bigshot lawyers," he told the audience of co-op directors and managers, "they're not influential, they're just high-priced. They don't have anywhere near the influence with a member of Congress that you do."

Jim Bedford wields his share of such influence with a quiet skill. Softspoken and unassuming, he is known as a scrupulously fair man whose roots run deep in Middle Tennessee.

At 49, Bedford is a lifelong Moore County resident who makes a living both in town and off the land, raising 200 head of beef cattle on 500 acres he owns or rents a few miles outside of Lynchburg. Off the farm, he's a distiller with the county's major employer and one of the area's most colorful businesses, the distillery that produces Jack Daniel's Tennessee Sippin' Whiskey.

Bedford brings a broad background of community involvement, farming concerns and business interests to his congressional visits on behalf of the co-op. That background, rounded out by a family history of political activity, puts him on a first-name basis with many members of the Tennessee congressional delegation.

And so, in a day and a half of congressional jawboning, each warm greeting Bedford and his fellows received underscored Bergland's assessment of influence.

Tennessee's senior senator, Democrat Jim Sasser, chairs his chamber's Budget Committee. That made him the point man in a long round of floor debates and back-room negotiations that got under way the same day his rural electric constituents came to town. But Sasser found time to take a break from the nation's business and chew the fat with more than 80 folks from home who lined a long table in a Senate meeting room.

Pronouncing himself "always delighted" to receive the annual invitation to visit with the Tennessee contingent, Sasser scanned the scores of faces around the room.

PHOTOGRAPHS BY ROBERT GIBSON

Opposite page: Jim Bedford gets ready to call on Congress. Above: Talking strategy over breakfast in a Capitol Hill hotel.

"Some of the best friends I've got in the state of Tennessee are in this group," he said. "I've always given your legislative agenda top priority. I know how important your work is to our state. I know how important your work is to the economic development in our state."

Minutes later, the group was greeting a man who a year earlier was running for president. Sen. Albert Gore Jr., D-Tenn., gave the rural electric visit a generous helping of his time, even though it was his first day back on the job since a car accident sent his young son to the hospital.

"An event like that really puts you in touch with what's important, and friendship is awful important," he told the assemblage, adding thanks for their cards of sympathy and concern. "I don't know of any group where I can count more close personal friends."

As the senators' statements suggest, Tennessee is a state where strong ties of family and friendship bind and shape a thinner layer of political relationships. And Bedford, joined on this trip by his wife Emily, was able to play on those more durable ties.

Emily Bedford, for instance, hails from Gore's hometown of Carthage. And while she can't claim a childhood friendship with the state's junior senator, their shared small-town roots give her a homey bond with a rising Senate star.

Bedford has a more pragmatic, but no less close, relationship with two of his state's nine representatives. The strong political friendship goes back to a fortuitous "two-fer" several years ago, when Bob Clement, who now represents the Nashville area in Congress, was running in the Democratic gubernatorial primary. Bart Gordon, now the congressman from a largely rural 17-county district in Middle Tennessee, was Clement's campaign manager. And the campaign's chief operative in Moore County was a cattleman and Jack Daniel's Distillery employee by the name of Jim Bedford.

Duck River's 43,000 members make the co-op a political pillar for Rep. Jim Cooper, whose district straddles the system's service area. But he didn't pull any punches in his visit with the rural electric group.

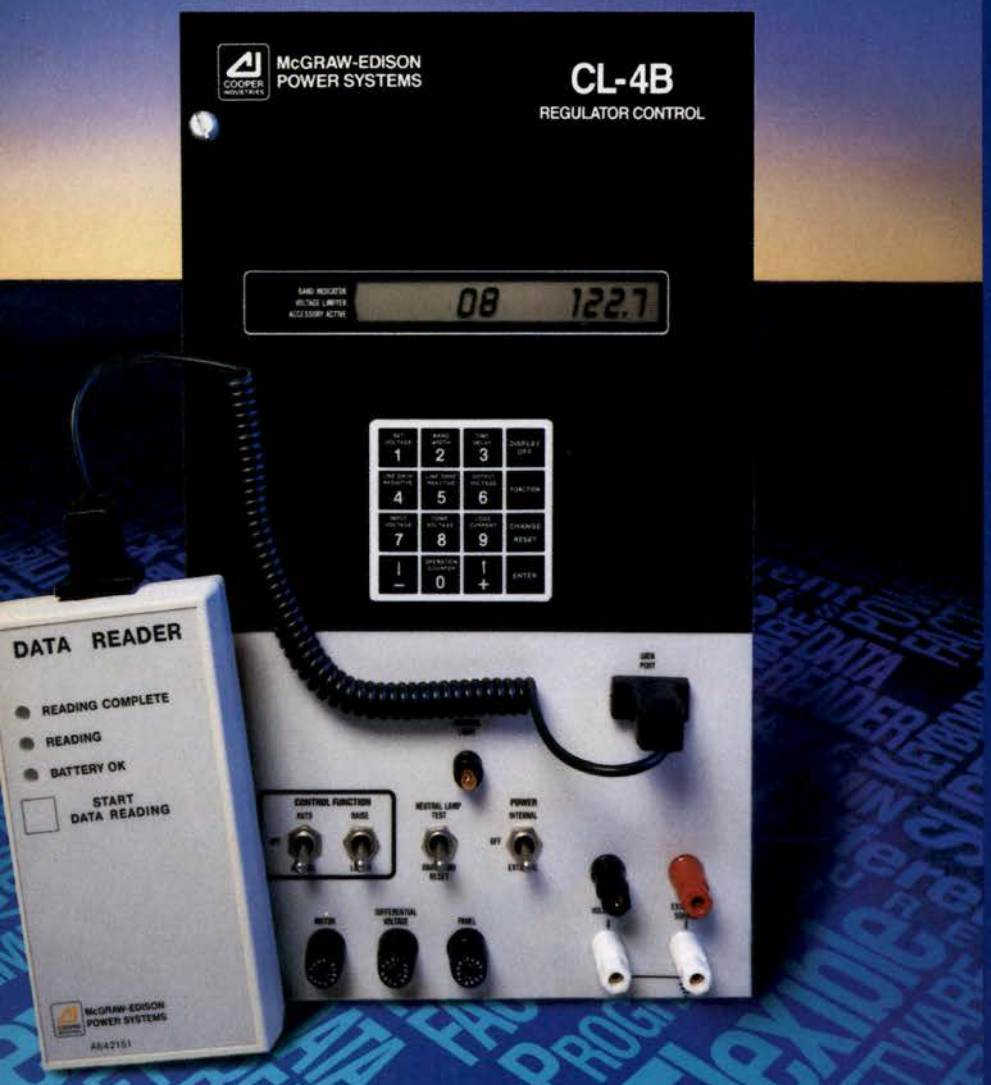
Cooper cautioned the Tennesseans about pushing hard for legislation to ease prepayment and refinancing of some power-supply co-ops' high-interest federal loans. "Everybody has to remember: A contract is a contract," he said, adding that "wiggling out" of such agreements could prove harmful later.

He conceded the importance of rural development legislation, but observed that other groups are interested, too, and some of them "very much see y'all as a threat." And he talked plainly about the future of REA, the agency whose planned destruction produced the first Legislative Conference in 1973.

"There are a lot of folks who think

(Continued on page 40)

All The Extras You Could Need Down The Line Are Now "Standard."



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You can count on Cooper Power Systems down the line.

G&Ts OWN TOP TWO COAL PLANTS IN U.S.

Minnkota plant places second for all fuels

By Patrick Dahl

Two rural electric G&Ts led all other U.S. electric utilities in operating coal-fired plants at the lowest cost during the five years from 1983 to 1987, according to the Utility Data Institute (UDI).

UDI ranked the top 100 nuclear, gas, oil and coal plants based on fuel, operating and maintenance costs. Taxes, depreciation, interest, insurance and other fixed costs weren't included.

The top coal plant was the 673-MW lignite-fired Milton R. Young plant at Center, N.D., which is owned by Minnkota Power Cooperative of Grand Forks, N.D. Its average production cost was $11.08 per MWh.

Right behind the Young plant was the Laramie River Station in Wheatland, Wyo., operated by Basin Electric Power Cooperative of Bismarck, N.D. Its production cost was $11.38 per MWh for the five-year period. The plant is jointly owned by Basin Electric, Tri-State G&T Association of Denver and several municipal joint action agencies in Minnesota, Iowa and Wyoming.

These two G&T plants produced power at just about half the 1987 national average cost of $20.74 per MWh, according to UDI. The study includes 351 coal-fired plants. That average is based on data that is supplied by the electric utilities to federal agencies, then analyzed by UDI.

When ranked alongside nuclear generating stations and power plants fueled by natural gas, the Minnkota and Basin generators came in second and fifth respectively in the top 100. There was only one plant, fueled by gas, that had lower costs than the Young plant and only two nuclear stations produced power less expensively than the Laramie River Station.

Out of the 51 nuclear plants studied, the 1,959-MW North Anna plant operated by Virginia Electric & Power Company, Richmond, ranked second at $11.31 per MWh. Virginia's Old Dominion Electric Cooperative owns 11.6 percent (216 MW) of that plant. Only one other nuclear station did better than North Anna. That was the first-ranked 1,186-MW Island Prairie Station of Northern States Power Company, Minneapolis. Its production cost was $11.23 per MWh.

The 230-MW Big Cajun One plant at New Roads, La., owned and operated by Cajun Electric Power Cooperative, Baton Rouge, was the second lowest-cost producer out of the three natural gas-fueled plants that made the top 100. Its production costs were $14.51 per MWh. The lowest-cost gas-fueled power producer was the 142-MW Rio Pecos plant of West Texas Utilities Company, which has headed the top 100 list for the last three years. Rio Pecos' costs were $4.58 per MWh, $6.50 lower than its nearest challenger, the lignite-fired Young plant of Minnkota Power.

The top 100 is comprised of 72 coal plants, 25 nuclear and the three gas plants. Overall, the coal plants' costs went down over the five-year period, from $22.38 per MWh to $20.74 per MWh. Gas plant production costs declined dramatically, from $41.67 per MWh to $28.94 per MWh, due primarily to fuel price decreases, according to UDI.

The average production costs for nuclear plants went up during the study period from $16.14 per MWh in 1983 to $21.78 per MWh in 1987, a 35-percent increase. But because of the relatively low cost of the uranium fuel, at least for now, nuclear power remains competitive, according to UDI.

Merrill Lewis, director of power production at Minnkota, says there were several reasons for the Young Station having the lowest production costs in the U.S. "A major factor is the high performance of the operations and maintenance crews and other support personnel," Lewis says. "They are the ones who keep the plant generating at a high level of productivity—and on line."

Another factor is the plant's low fuel costs, kept down by the favorable lignite contract negotiated for the Young Station more than 20 years ago, Lewis explains. The Young plant is a "mine mouth" plant, receiving its fuel from neighboring lignite fields close by the plant. There is very little fuel delivery or transportation expense—a big-ticket item for most coal-fired power plants.

Basin Electric general manager Robert McPhail says the high ranking of the Laramie River Station "bears out our strategy to emphasize efficiency and help keep our rates stable."

Richard Fockler, assistant general manager for operations and engineering, says that plants operated by Basin average 20 percent fewer employees than others in the industry. Other factors are relatively low coal costs, a strong preventive maintenance program, good inventory management and concentration on the co-op's "BTU Busters" program to develop ideas and suggestions for improving operation of the plant.

"Increased surplus sales have also helped keep generation levels higher, resulting in lower cost electricity," says Fockler.

Ernest Jordan, Jr., general manager of Old Dominion Electric Cooperative, credits the operations and maintenance crews with the success of the North Anna plant. "They do an outstanding job of keeping this plant on-line," says Jordan, noting that North Anna Unit 2 recently established a national availability record for nuclear power by operating 372 consecutive days without an unplanned outage.

The North Anna Unit 2 currently has an availability factor of 98 percent—extremely high and 33 points above the national average of 65 percent for nuclear plants. The first unit's record is 86 percent.

"Because of the high availability of these units," says Jordan, "Old Dominion and its member systems received 465,000 MWh of additional energy last year. That was a big savings—worth $7.2 million to Virginia rural electric consumers in 1988."

Other G&T coal-fired plants in the top 20 of the UDI list were: the 200-MW Ratts Station at Petersburg, Ind.,

(Continued on page 38)

PEOPLE

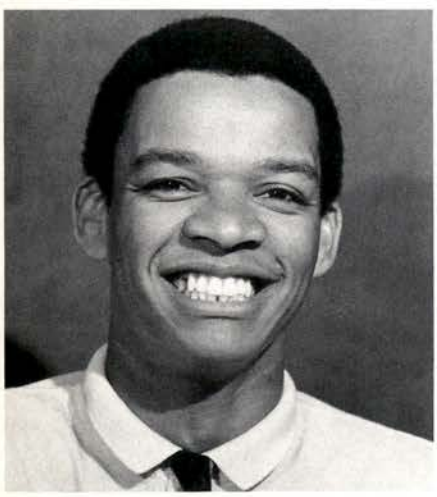
NATIONAL

MAGAZINE HONORED

Rural Electrification Magazine was named the top publication in the Association or Government Magazine category in a competition conducted by the Successful Magazine Publishers Group. Managing Editor **Frank K. Gallant** accepted the first-place award at the group's 10th annual conference in April in Atlanta, at which he also was a speaker. The 1989 Successful Magazine Awards were conferred for "outstanding quality of writing, editing, artwork and design."

Among rural electric personnel elected to leadership positions at the annual meeting of the Consumer Federation of America (CFA) were **Bob Bergland,** NRECA executive vice president and general manager, reelected to a third term on the CFA board of directors, and **Carl Turner,** recently retired executive manager of the statewide New Mexico Rural Electrification Co-op Association, Santa Fe, reelected CFA vice president. New president of the organization is **Jean Ann Fox** of the Virginia Citizens Consumer Council, vice president of the Consumers Union board of directors and past president of the Pennsylvania Citizens Consumer Council.

Winston E. Mukes, 35, assistant meetings coordinator for NRECA since 1987, died April 18 in a Washington hospital following a short illness. On the NRECA staff since 1980 (except for a brief period when he pursued an interest in travel), Mukes served as secretary for a variety of association activities, including public relations, communications, ACRE, special programs, art and printing. Before joining NRECA, he had worked as administrative aide to the president of a Washington political consulting firm, as bureau manager and administrative aide to the vice president of a journalism publishing firm, and as assistant coordinator/distributing manager for the Izaak Walton League of America, Arlington, Va.



Mukes

President **Robert Scherer** of the National Cooperative Business Association (NCBA) has announced the promotions of five NCBA staff members: **Russ Notar,** to be senior vice president for government, membership and public relations (previously senior vice president, domestic operations); **Peggy Sheehan,** now vice president, food and public policy (formerly vice president, food policy and government relations); **John Gauci,** vice president, member services and cooperative development (formerly director, membership and co-op development); **Paul Hazen,** vice president, government relations (previously director, consumer cooperatives), and **David Thompson,** vice president, Western states and director of international relations (former title was director, international relations).

REGION 1

INDUCTEE DIES

Barbara H. (Mrs. Percy) Deverick, 64, cooperative affairs adviser at Blue Ridge EMC, Lenoir N.C., and longtime leader in the rural electrification and cooperative movements, died of leukemia April 3, just nine days before her scheduled induction into the Cooperative Hall of Fame. She was one of three inductees honored at the Washington April 12 ceremony by the National Co-op Business Association (formerly the Cooperative League of the USA), of which she was a board member, past chair and on its Overseas Co-op Development Committee.

A Blue Ridge EMC employee since 1942 (except for 1945-46 when she was an interviewer at West Virginia University, Morgantown), Deverick began as a part-time accounting assistant and served successively as accountant, manager of office services and administrative manager. She had a key role in the development by NRECA of an international program in which Blue Ridge became the first U.S. rural electric co-op to have a "sister" relationship with an electric co-op in Santa Cruz, Bolivia. Deverick served on team assignments under NRECA's International Programs Division in Jamaica, Costa Rica, the Philippines, Indonesia and Bangladesh as well as Bolivia. She also was president of the National Women's Task Force, predecessor of the National Rural Electric Women's Association.

Deverick

Deverick was on the boards of the Cooperative Development Foundation, the National Rural Electric Co-op International Foundation, the Agricultural Co-op Development International,

the North Carolina Co-op Council, the International Cooperative Alliance and its Women's Committee. Active in community and area organizations, she was recipient of numerous honors, including recently the Distinguished Service and Citizenship Award from the Northwest North Carolina Development Association and being named an honorary director by the North Carolina Cooperative Council.

Joining Blue Ridge EMC as marketing manager is **Ed Kindler** of Rushville, Ohio, who has worked more than 18 years for South Central Power Co., a co-op headquartered in Lancaster.

Albert Ingerick, manager of electric operations since 1971 at Claverack REC, Towanda, Pa., has retired after 41 years with the co-op. Beginning in 1948 as a groundman, he later served as a lineman and area foreman. Also retiring at Claverack is **Glenn Custer,** 33-year employee who started in 1956 as an apprentice lineman and recently was a journeyman lineman.

Melvin Starner of New Oxford, Pa., board member 1960-86 of Adams EC, Gettysburg, died April 3. He was given a special award at the co-op's 1986 annual meeting.

Observing its 50th anniversary is Washington EC's monthly newsletter, *Co-op Currents,* first published by the East Montpelier, Vt., co-op in October 1939 as *"Copper Currents."* Co-op member **Denise Jacques** of Barre has been editor since 1982.

REGION 2

RESCUE CHAMPION

Winner of the fifth South Carolina Pole Top Rescue Championship is **Bill Beam** of Lugoff, a 33-year-old lineman for Fairfield EC, Winnsboro. Competing against 62 representatives of 12 of the state's 20 electric co-ops, Beam took just 27 seconds—a record—to scurry up a utility pole, hog-tie an "injured" colleague and return him to the ground with the help of a pully and two co-workers. Most of the competitors completed the rescue job in less than 50 seconds. "In an actual emergency, these men would have less than two minutes to get a victim to the ground for resuscitation before permanent damage occurs," said **Bobby Blume,** job training and safety director for the statewide Electric Co-ops of South Carolina, Cayce, which organized the competition to promote training and safety awareness.

J. Calvin Earwood of Dallas, Ga., director of GreyStone Power Corp., Douglasville, has been elected board chairman of Oglethorpe Power Corp. (G&T), Tucker. Previously vice-chairman, he succeeds **Hubert Hancock,** president of Upson County EMC, Thomaston, who headed the G&T's board since 1984 and was Georgia director 1979-89 on the NRECA board.

Hancock was honored at a Georgia statewide board meeting with a plaque recognizing his 10 years on the NRECA board, which included service as chairman of the Statewide Relations and Energy and Environmental Policy committees and as a member of the Management Services, Operations and several ad hoc committees.

REGION 3

PRESIDENT NAMED

Elected president of the statewide Alabama Rural Electric Association was **R.R. (Bud) Johnson,** president of Covington EC. He succeeds **William W. Oxford,** manager of Cherokee EC, headquartered at Centre.

Four editors of local co-op pages in that statewide's monthly consumer publication, *AREA Magazine* (now renamed *Alabama Living*), were recipients of awards at the Montgomery-based association's annual meeting. Awards of merit for writing and editorial quality went to **David Farnsworth** of Central Alabama EC, Prattville; **Alan Thrash** of Covington EC, Andalusia, and **Jesse Culp** of Marshall-DeKalb EC, Boaz. Receiving awards of merit for member education were Farnsworth, Thrash and **Dot Youngblood,** formerly of South Alabama EC, Troy. Central Alabama EC and Covington EC tied for the top award of "Best Use of the Magazine" to carry the co-op's message to its membership.

Saluted for 35 years of service at Four-County Electric Power Association, Columbus, Miss., was **Oscar Boykin,** Macon District manager since 1985 who has been with the co-op longer than any other active employee. Starting in 1953 as a groundman, he later served as a lineman, crew leader and staking engineer.

Reginald W. (Rick) Rand, Jr., of Bedford, Ky., partner in a family insurance firm who holds a business administration degree from Hanover (Ind.) College, has been appointed to the board of Shelby RECC, Shelbyville, to fill a vacancy caused by the death last Sept. 6 of **Morris Webb,** 35-year veteran director.

Burma Thomas, named Angler of the Year in 1988 by Bass 'N Gal, the women's professional bass angler society, for the third time in four years, recently moved from Rainsville, Ala., into a new home within casting distance of the Tennessee River just above Lake Guntersville in Jackson County. Both homes receive electricity from Sand Mountain EC, Rainsville. As top woman professional bass angler in the United States, Thomas has won 14 boats and more than $260,000 in prize money since she entered her first tournament in 1975.

Ernest L. Skinner, manager since 1978 of Harrison County RECC, Cynthiana, has retired after more than 42 years with the co-op. Beginning work in records of materials and accounting in 1947, Skinner became office manager in 1963. He is a Navy veteran of World War II. Succeeding him as manager is **Danny Haney,** Harrison County RECC employee since 1976 and office manager since 1978. A business administration graduate of Morehead State University, Haney previously was office manager for an oil distributor firm in his hometown of Grayson.

Hank and Diane Gaines, members of Central Alabama EC, Prattville, were named (along with their daughters, **Kelly**, 5, and **Ginger**, 2) as the state's Outstanding Young Farm Family for 1988. The annual program is sponsored by the Alabama Farmers Federation and its State Young Farmers Committee.

REGION 4

FAMILY HONORED

Named Indiana's Honorary Farm Family by the Indiana Agriculture Committee were **John and Mary Hilger** and their five daughters—**Jennifer**, 12; **Maryann,** 10; **Sally**, 9; **Kathleen**, 7, and **Michelle**, 4. The family businesses—Henry Hilger and Sons Farms, Hilger's Farm Market and Hilger's Farm Restaurant—are located between Fort Wayne and Columbia City on lines of Northeastern REMC, Columbia City. Mary also is a full-time schoolteacher and artist. A feature of the festivities planned for the newly honored family was a visit from Vice

President **Dan Quayle** and his wife, **Marilyn.**

Two of the four 1989 Indiana Master Farmers selected by *Indiana Prairie Farmer* magazine are present or past electric co-op members. The 1,880-acre operation of **Steve Sickafoose** of South Whitley, raising sows, dairy heifers, corn, soybeans and wheat, is on Northeastern REMC lines. **Homer McDonald** of Hillsboro, Indiana State Fair Board president who is a third-generation producer of Shorthorn beef cattle, is a former member of Tipmont REMC, Linden. The 3,535 acres he farms with his son, **Alan,** and son-in-law, **Steve Holt,** grew soybeans, corn and popcorn last year.

Jill Long (D-Ind.), who was elected to the U.S. House of Representatives in a special March race, is a member of Noble County REMC, Albion, Ind. Long, who had been unsuccessful in two previous Congressional campaigns, narrowly defeated Republican **Dan Heath** to win the Fourth District seat vacated by **Dan Coats** (R), who was named to succeed Vice President Quayle as senator. Quayle represented the Fourth District when he first went to Congress.

Kevin Sump, general manager since 1983 of Cedar Valley EC, St. Ansgar, Iowa, has been named general manager of Morgan County REMC, Martinsville, Ind. Sump, rural electric program veteran since 1972 who also served as manager of Cherokee County REC, Cherokee, Iowa, succeeds the retired **Richard (Dick) Seger** at Morgan County REMC. Interim manager in recent months was **John Root**, retired manager of Menard EC, Petersburg, Ill.

Deaths reported: Feb. 27 at a medical center in Guadalupe, N.M., **Chester Cornett,** 78, an original incorporator and board member 1960-77 of Daviess-Martin County REMC, Washington, Ind. . . . March 5 after an illness of several months, **Albin W. (Bud) Wilson,** lineman for 35 years at Marshall County REMC, Plymouth, Ind.

REGION 5

MASTER FARMERS

All four Illinois farmers selected as 1989 Master Farmers by *Prairie Farmer* magazine are members of rural electric co-ops, one also serving on his co-op's board. **Laverl Byers,** operator of a 960-acre grain farm near Tuscola in Douglas County, is a director and vice president of Eastern Illini EC, Paxton. He was president of the former Illini EC, Champaign, before its consolidation in September 1987 with Eastern Illinois Power Co-op to form the present Eastern Illini. The other new Master Farmers: **Edwin (Sonny) Eddleman** of Anna, member of Southern Illinois EC, Dongola; **Dean C. Ganschow** of Walnut, member of Illinois Valley EC, Princeton; **Glenn R. Meyer** of Steeleville, member of Egyptian ECA, Steeleville.

William E. (Bill) LeCrone, recently retired manager of Shelby EC, Shelbyville, Ill., has been elected mayor of Shelbyville. LeCrone, Shelby EC employee more than 44 years and general manager 1972-89, won the city post by wide magins in both the nonpartisan March primary and the April general election.

New executive vice president and general manager of Central Iowa Pow-

er Co-op (CIPCO), Cedar Rapids, is **Dennis L. Murdock,** 21-year employee who has been serving as interim manager since the resignation in January of **Richard Arnold.** Murdock's previous positions with the G&T have included director of finance, assistant to the general manager and

Murdock

Haugen

assistant general manager.

Named to the position of corporate communications specialist at CIPCO was **Joyce D. Haugen,** 22-year employee who most recently has been executive secretary to the general manager. She succeeds the resigned **Kathy Staskal,** who held the title of manager of public information.

Recent deaths: Feb. 26 in a Quincy, Ill., hospital, **Robert Lee Smith,** 61, of Baylis, Ill., line foreman who was employed by Western Illinois Electrical Co-op, Carthage, since 1948, except for three years with Mountain Parks Electric, Granby, Colo. He had been on disability leave since 1987. . . . Feb. 28 in Winter Haven, Fla., **Clarence F. Doerr,** 84, of Oshkosh, Wis. (formerly of Hillsboro, Ill.), retired director (1949-77) of MJM EC, Carlinville, Ill., and 1962-77 of the statewide Association of Illinois Electric Co-ops (AIEC), Springfield. . . . March 17 of a massive heart attack, **Darlene Farber,** material clerk at Monona County REC, Onawa, Iowa, who had been with the co-op for 26 years.

Lorraine Henning, director of administrative services at Woodbury County RECA, Moville, Iowa, has retired after 37 years of service.

A chapter in the history of Maquoketa Valley REC, Anamosa, Iowa, has closed with the recent retirement of five veteran linemen whose combined service totaled 188 years. They are: **Ray Eden** of Maquoketa, 41 years; **LaVern Funke** of Farley, 40 years; **Jim White** of Anamosa, 38 years; **Lou Stoll**, Anamosa, 36 years; **Junior Hinz**, Anamosa, 33 years.

REGION 6

EDITORS CHOSEN

Newly named director of communications and member services at the statewide South Dakota Rural Electric Association (SDREA), Pierre, is **Ron Davis**, CREC (Certified Rural Electric Communicator), who joined the SDREA staff in August 1981 to head the Member Services Department and serve as associate editor of *South Dakota High Liner*, the statewide's monthly consumer publication. His new responsibilities include managing both the Communications and Member Services Departments and serving in the new post of editor-in-chief of the *High Liner.*

Joining the *High Liner* staff June 5 in the newly concentrated position of editor (minus previous administrative responsibilities) is **Brian Boyer**, a graduate of South Dakota State University, Brookings, with degrees in mass communications and political science as well as education and coaching certifi-

cates. Currently teaching English, speech, literature, criminal justice and South Dakota history at Hill City High School, Boyer previously published his own weekly newspaper, the *Rushmore Press*, in Hill City, taught journalism at Brookings High School, served as news editor at the *Rock Valley* (Iowa) *Bee* and as news photographer with the Gettysburg (S.D.) *Potter County News*.

Davis, holder of a journalism/mass communications degree from the University of South Dakota, was a travel/outdoors writer for the state of South Dakota before joining the SDREA staff. In his new post, he replaces **Kent Brick**, CREC, former communications director/*High Liner* editor who has accepted a Denver-based position with NRECA's Management Services Department.

Retiring after more than 40 years in the electric co-op business is **Murrel Johnson**, manager the past 17 years of Whetsone Valley EC, Milbank, S.D. Succeeding him in that post is **Dennis Lamke**, former manager of engineering and construction for Crow King Power and Light Co., Brainerd, Minn.

Stepping down as director of North Itasca EC, Bigfork, Minn., is **Ludwig Haataja** of Deer River, who served 35 years on the co-op's board.

REGION 7

G&T CO-OPS ELECT

Joe DeGanahi II of Yampa, Colo., director since 1976 of Yampa Valley Electric Association, Steamboat Springs, has been reelected board chairman of Colorado-Ute Electric Association (G&T), Montrose. Yampa Valley's representative on the Colorado-Ute board since 1977, DeGanahi was first named chairman last January to fill a vacancy.

Reelected president of the Nebraska Electric G&T Co-op, Columbus, was **Dempsey McNiel**, director of Twin Valleys PPD, Cambridge.

Deaths reported: Nov. 20, 1988, **Everett Ledbetter**, 65, retired 23-year manager of NCK EC, Belleville, Kan., who served nearly 34 years in the program before his 1980 retirement. Ledbetter was an original trustee and first secretary of Kansas Electric Power Co-op (G&T), Topeka.... Dec. 24, **Harold Nelson**, 74, of Oakland, Neb., longtime director of Burt County PPD, Tekamah. (Appointed successor: **Lloyd Hurrell**.) ... Dec. 31, **Ralph Lipper**, former agricultural engineering professor at Kansas State University, Manhattan, longtime promoter of rural electrification. He was active with the Kansas Farm Electrification Council and the Kansas Committee on the Relationship of Energy to Agriculture.... Jan. 5 at an Omaha hospital, **Lawrence Thiele**, retired accountant for Cornhusker PPD, Columbus, Neb., who had been an employee more than 35 years when he retired in 1982.... Jan. 15 after a long illness, **Ray Ronne**, retired director of York County RPPD, York, Neb., who had served 25 years before retiring in 1987. Ronne also was on the board of Nebraska Electric G&T Co-op, Columbus.... Feb. 21, **Foster L. (Dutch) Mills**, 78, of Ten Sleep, Wyo., director since 1949 of Big Horn REC, Basin. Active in community affairs, Mills served on the board of the statewide Wyoming Rural Electric Association, Casper.

Ronald E. (Ron) Garchar has resigned as manager of San Luis Valley REC (SLVREC), Monte Vista, Colo. Named to succeed him as interim manager is **Rod Hanson**, 46-year rural electric veteran who retired in 1986 as manager since 1957 of Sun River EC, Fairfield, Mont.

Longtime SLVREC employee **Web Allison**, nationally known cartoonist and humorist, has retired as editor of the co-op's monthly publication, *Newsboy*, which he founded in 1947 after having joined the staff in 1937. Author of the "Boring from Within" column in *Rural Electrification Magazine*, Allison also creates cartoons for other co-op publications, including a regular supply distributed by NRECA through the Rural Electric News Service. Saluted by his colleagues as SLVREC Employee of the Quarter, he is succeeded as *Newsboy* editor by his son, **Mark Allison**, codirector of the Rio Grande County Museum who with his wife owns and operates an antique store in Del Norte.

REGION 8

PEEPLES RENAMED

Charles Peeples of Mannford, Okla., has been elected to his second term as president of the board of trustees of KAMO EC (G&T), Vinita. A retired U.S. Army Corps of Engineers employee, Peeples has served 12 years on the KAMO board as representative of Indian EC, Cleveland, of which he has served as vice president and president.

Carl S. Whillock, president/chief executive officer since 1980 of the statewide Arkansas Electric Co-ops, Inc. (AECI), Little Rock, and its G&T affiliate, Arkansas Electric Co-op Corp. (AECC), was subject of the featured cover article in a recent issue of *Arkansas Business*, Little Rock trade publication. President of Arkansas State University when he was offered his present post, Whillock has had experience since 1946 as a high school teacher, part-time Methodist pastor, livestock feed and petroleum salesman, Congressional executive assistant, private practice lawyer, prosecuting attorney, part-time instructor, assistant to the president and vice president for governmental relations and public affairs at the University of Arkansas at Fayetteville, campaign manager for gubernatorial candidate and executive secretary to then Governor **David Pryor**, as well as a member 1953-56 of the State House of Representatives. The article credits him with a "solid record as an administrator" and being an "accomplished troubleshooter."

Retiring March 1 after almost 39 years with Osage Valley EC, Butler, Mo., was **Glenn Domer**, office manager since 1974. Beginning in the right-of-way department in April 1950, Domer became bookkeeper later that year. Succeeding him as office manager is **Daryl Veatch**, former accounting supervisor at Grundy EC, Trenton, Mo.

REGION 9

CREDITS USE OK'D

The signing into law by Idaho Governor **Cecil D. Andrus** of legislation requested by the statewide Idaho Cooperative Utilities Association (ICUA), Mackay, enables the state's rural electric co-ops to use locally generated revenues to help revitalize rural communities. The new law permits the co-ops, rather than the Idaho State Tax Commission, to hold—and benefit from investing—unclaimed retired capital credits for member-owners until they are claimed. ICUA President **Don Carson,** who also is president of Prairie Power Co-op, Fairfield, saw such investments by cooperatives as working "to the strong advantage of the communities they serve." **Roy L. Eiguren** of Boise, legal counsel for

ICUA, noted that the Idaho Code already allowed county governments similar power with respect to unclaimed property.

New manager of Cordova (Alaska) EC is **Bill Kaltenekker,** former manager of Metlakatla (Alaska) Power & Light. He succeeds **W. Douglas Bechtel,** who has become manager of Orcas Power & Light Co., Eastsound, Wash. Kaltenekker's successor at Metlakatla is **Bill McKinney.**

Hazel Hake Alderman, widow of the founder and longtime editor of *Ruralite* magazine, editor in her own right of its "At Home" pages and author of two popular cookbooks, died March 17 in Portland, Ore., following a long illness. Her husband, **Henry (Hank) Alderman,** former executive officer of Bonneville Power Administration, joined in 1954 with a dozen rural electric leaders in forming a new publishing venture to keep rural electric consumers informed. The first issues of the then-tabloid *Ruralite* (which now reaches readers in six Northwest states from its Forest Grove, Ore., headquarters) were produced in the couple's home. Drafted to edit the homemaker pages on a temporary basis, Hazel continued with those and other magazine duties for 22 years, using the pen name, **"Mary Frances Cooke."** She continued after Hank's death in 1972 until retiring from the magazine in 1976, but then took on a special project, compiling first one, then two cookbooks of recipes from *Ruralite* readers.

Dying last Dec. 11 was **Robert Marion Kerr,** 84, longtime legal counsel for Salem (Ore.) EC and nationally recognized expert in cooperative law who was co-author of the Oregon Cooperative Corporation Act. At the end of World War II, Kerr was U.S. Army prosecutor in the 1946 war crimes trial of the Japanese wartime commander of the Philippines, General **Tomoyuki Yamashita,** who was subsequently convicted and executed.

REGION 10

SAFETY AWARDS

Murray Simmons, director of operations and instruction for Midwest EC, Roby, Tex., who has worked more than 40 years in the electric power industry, received the first Ray Pantel Meritorious Service Award at the 43rd annual Texas Job Training and Safety (JT&S) Conference in Kerrville. Making the presentation were **Virginia Pantel,** wife of the late leader, **Ray Pantel,** and **Henry Heinen,** chairman of the Texas JT&S Advisory Committee. Also nominated for the new award were: **Werner Moehr,** Central Texas EC, Fredericksburg; **Bill Maness,** Southwest Texas EC, Eldorado; **Ralston Krumrey,** San Bernard EC, Bellville; the retired **Lawrence Sweat,** Kaufman County EC, Kaufman; the retired **W.W. (Dub) Gurley,** Lyntegar EC, Tahoka.

Recipient at the conference of the General Electric Award for Outstanding Safety Achievement was San Bernard EC, whose employees had worked 653,199 hours as of Jan. 31, 1988, without a lost-time accident. Accepting the award was the co-op's **Max Fahrenthold.**

Reelected president of Arizona Electric Power Co-op (G&T), Benson, was **N. Paul Rawson,** general manager of Graham County EC, Pima.

GENERATION & TRANSMISSION

(Continued from page 31)

owned by Hoosier Energy REC, Bloomington, Ind., 8th; the 656-MW Leland Olds Station at Stanton, N.D., Basin Electric, 10th; the 321-MW John Sherman Cooper Station at Burnside, Ky., East Kentucky Power Cooperative, Winchester, Ky., 13th; and the 1100-MW Coal Creek Station near Coal Creek, N.D., operated by Cooperative Power Association, Eden Prairie, Minn., which has a 56-percent ownership share in the plant, 16th.

Big Rivers Electric Corporation, Henderson, Ky., had three coal-fired plants in the top 100 and Basin Electric, East Kentucky and United Power Association, Elk River, Minn., had two each.

Other G&Ts with plants in the top 100 were Dairyland Power Cooperative, La Crosse, Wis., and Associated Electric Cooperative, Springfield, Mo. Allegheny Electric Cooperative, Harrisburg, Pa., has a 10-percent share in the 2100-MW Susquehanna nuclear plant operated by Pennsylvania Power & Light, which ranked 24th in the nuclear category.

Twelve G&Ts had a total of 16 plants in UDI's top 100. ●

THE ROBOTS ARE COMING

(Continued from page 23)

ing other fuels. "There are only a couple of basic designs for nuclear plants," points out Wade Malcolm, project manager for EPRI's electrical systems division. "But the construction and engineering of non-nuclear substations and utilities differs from one to another. That means most robots have to be either very versatile or very small and affordable, and most are neither."

But manufacturers are looking at ways of converting their robots for non-nuclear applications. "We've received many more inquiries about non-nuclear applications of robotics in the past year," says Dr. Eugene Silverman, president of ARD Corporation. "We now see great potential in [marketing robotics] for pipe inspections, for cleaning certain types of holding tanks, maybe even for condenser intake inspection and cleaning."

Increasingly, manufacturers are likely to adapt products designed for other industries to fit the needs of utilities. "We're working on robots that will scrub floors in supermarkets, helpmates that can assist nurses in hospitals, robots that can prepare foods and fill prescriptions and play a much bigger role in the service industry," says Joseph Engelberger, chairman of Transitions Research Corporation and widely acknowledged as the father of robotics.

"Do robots that can do those sorts of things have a place in a power plant?" he asks. "I'm not sure, but I think it's very possible."

EPRI is also funding a project to develop a robot that can inspect distribution vaults and collect samples of vault gases. "I think that ultimately you'll see robots being routinely used for substation and vault maintenance," says Malcolm.

Although their use carries some clear benefits, the growing role of robotics in the utility industry will also prompt some obvious questions. Most obvious is the issue of whether more robots will translate into fewer flesh-and-blood workers. Indeed, several experts say that, eventually, most line maintenance tasks now requiring two or three people to climb poles could someday be done with one man and a sophisticated robot.

But advocates of robotics say most of the robots that will be produced in the foreseeable future will simply move workers away from hazardous areas. "You're not really replacing people," says Gelhaus. "For the most part, you're moving someone from hands-on work in a hostile environment and making him the operator of a robot instead. People can still do their jobs, but without a lot of the unpleasant and risky aspects."

It's not just the way jobs get done that is likely to change with robots. The career paths of workers could also be modified in unexpected ways. "One thing a tool like a Tomcat could do is prolong the careers of skilled linemen," notes Kennon. "A lineman may get too old to climb a structure, but he could still do line work from the ground using one of these."

The demand for robots is likely to slowly increase as utilities come under increasing pressure to make better use of their existing physical plants and keep costs down while maintaining high service levels. Engineers with long-term perspectives say that eventually utilities will have access to affordable robots that can independently inspect power plants and other facilities, determine what sort of maintenance is required, and carry it out. For now, however, the cost of most robots, and the limited ways in which they can be used, puts them out of the reach of most co-ops.

"It's going to be a slow and expensive process," says Dick Atkinson of Foster-Miller. "Robotic development is not cheap, and also, you're dealing with an industry that has been reluctant to make changes. It's up to us to show how robots can be used and how they can save the industry money."

Gelhaus says the process of introducing robots into the industry is "evolutionary, not revolutionary," and likens it to the industry's assimilation and acceptance of another far-reaching technology. "We're perhaps at a stage similar to when these things called personal computers were introduced. Along came this new thing that would evenutally change the way everyone worked, and people were saying at first, 'What am I going to do with a big computer in my office? Why do I need that?' It took a long marketing process before people were convinced this was a good new way of doing things." ●

STARTING OVER

(Continued from page 21)

The outages that kept Howard Cooley from seeing his kids are now "a fluke," he says. "A piece of trouble will tick you off—we just don't have it now. The consumers are happy, the employees are happy, there's just no better place."

Others, however, can't put the crisis behind them quite that easily. The "bones in the closet" still haunt Head and Fuller, who continue to meet regularly with the Save Our Co-op Committee, even though it has been renamed the Support Our Co-op Committee and its meetings these days generally turn to war stories of the battle to save Coosa Valley Electric.

But if that group is still around, Head and Fuller reason, the Concerned Citizens may well be lurking somewhere, too, its embittered members gathering to mutter and grumble. "There's no question but what it's a sleeping giant," Head cautions.

"It's like they've got a pact," Fuller agrees darkly. "They're just waiting their turn. Some of them have said they'll be dead in hell and still be fighting this co-op." ●

By Web Allison

A WORLD CLASS TIGHTWAD

Tom Boom's newspaper clipping tops 'em all

Rummaging through my "Well-I'll-Be-Darned" file of clippings recently, I found these gems:

• An advertisement in the *Pueblo Chieftain* for a funeral home offering a special price on cremations—$299.50. The offer was good through May 31.

• An item in a California newspaper announcing a "Too Many Pets" program for youngsters, sponsored by the local library. "Youngsters from kindergarten age up are invited to bring a stuffed animal, take part in a sing-a-long and hear a basic discussion on spaying and neutering. They will have an opportunity to spay their own animals with a band-aid."

• An article about a wildlife park in England that was attempting to revive an earthworm more than six feet long as a possible entry in the *Guiness Book of Records*. The giant worm, probably bushwacked by a bird who found he had bitten off more than he could chew, died while park attendants attempted to film it. But the head section lived, and the park manager placed it (the still squirming end) in some loam in a heated tank, hoping it would grow back to its former glory. "It's certainly worth a try," the gentleman is quoted. "It was a sad moment when the worm died, but I felt like this was the least I could do for it."

• Another warns of high noise levels. For instance, a quiet library measures 30 decibels, normal conversation runs 60 to 70 decibels, a screaming child can generate 90 to 115 decibels, a jack-hammer hits 100, a rock concert can measure 120 and a jet plane at takeoff registers 130 to 150 decibels. OSHA recommends ear protection for repeated or continuous exposure above 80. So stay away from unhappy children.

• The *Wall Street Journal* reported that 45,000 people in Birmingham, Ala., sought eternal fame in the *Guiness* book on New Year's Day by playing "The Stars and Stripes Forever" en masse on kazoos, only to discover that just a few minutes ahead of them, a crowd of 55,000 had blown their kazoos in cacophonous concert in Rochester, N.Y.

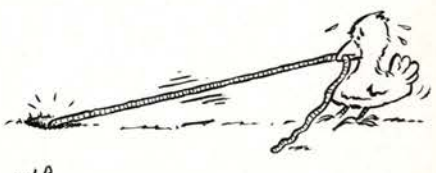
• In an article titled "Living Dangerously" by Bill Bryson in the *Saturday Evening Post*, we learn that you are more likely to be kicked to death by a donkey than die in a plane crash. You are three times more likely to get struck by lightning than win the lottery. If you find your job boring, the more likely you are to suffer heart disease. In fact, having a boring job is equivalent to smoking a pack of cigarettes a day. For those of us who wear both suspenders and a belt, the Bryson article said, the chances of suffering "coincident failure," which means both galluses and belt give out at the same time, are one occurrence every 36,000 years.

• In his humor column in the *Denver Post*, Dave Barry reports that the average cow emits 200 to 400 quarts of methane gas each day, or a total annual world cow methane output of 50 million metric tons. Quoting a veterinarian, cows produce up to three quarts of gas a minute, and if the poor creature can't burp, "its stomach can explode within the hour." In fact, said Mr. Barry, that's exactly what happened to a cow in New Zealand. (In light of this startling fact, Dave felt it necessary to remind us that we should never allow a cow inside our sleeping bag.)

• An Erma Bombeck column about her Christmas Newsletter contest, which was won by a woman who described in detail her birthing of a child by C-section, "with Dwayne [her husband] and camera at hand." Further note was made that "Dwayne found the event quite an experience."

On a recent visit with Manager Tom Boom at the P.D.Q. REC I brought along my file of clippings to share with him, a defect in my character that he regards with the patient tolerance one would give a moronic child. However, on this last occasion, Mr. Boom surprised me. After I had read off the above and then some with much guffawing and knee slapping, Manager Boom casually slipped a clipping out of his desk drawer and handed it to me. It concerned a California (where else?) newspaper that had run a contest to find the "top tightwad" among its readers. The winner was a retired gentleman who boasted he saved 23 cents a roll on toilet paper by separating the two plies, obviously resulting in twice the mileage per roll.

Now, how did I miss that one? ●



Rural Electrification
MAGAZINE

Next MONTH:

- NRECA President Jack Williams knows his way around business and politics
- Ohio annexation fight
- The hottest new ideas in the utility business
- Our annual directory of rural electric systems

SOLUTIONS

(Continued from page 4)

the load. It would simulate this through the analysis software and also on the graphics software. If I make the changes on the analysis side it would automatically update the graphics representation. It's a 'what if' tool, and it can simulate what you may have to do in the field before you have to do it."

Most rural electric systems need an operational circuit diagram, showing the existing system, the phase connections, all the sectionalizing equipment, switches, fuses, breakers and capacitors. A system like this will allow you to draw the map, with geographic features, a grid system and all of these items layered in. "You can piece it together in any way. You can input it at any scale and output it at any scale," says Lindsey.

Traditionally, small utilities have depended on outside consultants to do engineering studies. This new computerized tool gives them the ability to do this in-house and it also gives them a way to control and analyze the data that they collect every day. And soon there will be more software for the operations side, according to Lindsey.

"We are in the process of developing outage reporting software. In most utilities we find so many different departments with a lot of duplicated work going on. We should be able to input data in one area and automatically ship it to the other areas without manually having to do it two or three times," says Lindsey.

Gleason cautions co-ops to "be very careful to distinguish between your needs and ours, or someone else's. Look at your area, at your personnel, your size, your financial considerations, your existing data base, all of the paper flow you have now. Think about your needs now and five years from now. More than anything, don't get caught up in the techno-Pollyannaish feeling that it's going to make it all easy.

"I encourage thoroughness in homework and methodic planning and lots of communication with everyone involved. And you need a real facilitator who can nurture that communication. It can be terribly threatening or intimidating to many people. And finally, you've got to avoid ending up with a technical laboratory in one corner of your operations. This should allow people to be more productive, more efficient and accurate, thereby freeing up time to work on other projects that would otherwise not be possible if you are tied to the old tasks and the old ways. It is worth it," says Gleason. ●

VISITORS FROM HOME

(Continued from page 29)

REA has outlived its usefulness, that it's too sweet a deal," Cooper explained. His rural electric visitors knew he stands with them on the need for the agency, but his straight talk silenced them for a moment.

Bedford, however, has the dance steps down. Long before he got into behind-the-scenes politics, his father was managing statewide campaigns, and his son could draw on family tradition to smoke out the good news.

"He's probably one of our strongest supporters," Bedford said of Cooper later. "A smart politician is not going to promise something right off. You don't expect a full yes or no; all you ask is that they study your positions."

Meanwhile, the pattern of chitchat and policy debate, followed by the inevitable political calculation and speculation, was being repeated in hundreds of Capitol Hill offices. It is the unavoidable main course of the Legislative Conference.

But this year, Jim and Emily Bedford also had dessert.

A co-op director for 12 years, Bedford had made two previous lobbying trips to the nation's capital on his co-op's behalf. Those visits always came out of his vacation time at Jack Daniel's, and sometimes they meant being away from his cattle at a bad time.

But this year things were different: calving season was over and haying season hadn't started, and Emily could get vacation leave from her accounting job. Everything fell into place, so the two of them took their first vacation alone together in 19 years—a one-day, whirlwind tour of the federal city's memorials and monuments. ●

MTNs ARE A SAFE COMPROMISE

Co-ops keep looking for smarter ways to invest excess cash

By Michael Gordon Sorohan

Rural electric systems have long-recognized the benefits of investing temporarily excess cash in interest-earning investment programs—commercial paper, corporate bonds, treasury notes and certificates of deposit. Increasingly, co-ops are choosing another option, medium-term notes. In just under 10 years, medium-term notes, or MTNs, have attracted a significant number of investors who want a higher rate of return than treasury securities and a longer maturity period than commercial paper.

MTNs are senior, unsecured debt securities with maturities of nine months to 40 years. Most mature in two to four years. They are unsecured, but they are a low-risk investment because they are generally rated highly by the rating agencies and because issuers of MTNs have strong credit ratings.

MTNs are a senior debt obligation and the investment period is relatively short. Most MTN programs pay interest on a "bond-equivalent;" that is, interest is based on a 360-day year and paid semi-annually, the same as a standard corporate bond.

MTNs were developed in the early 1980s by Ford Motor Credit and General Motors Acceptance Corporation, which were looking for a way to raise medium-term debt in the capital markets to match the interest rates on the capital they were borrowing to make cars. It was a way to reduce the financial risk between the time cars were produced and sold.

Today, more than 150 entities, including CFC, issue MTNs, making them one of the fastest growing types of investment in the capital markets. While domestic corporations make up the bulk of MTN issuers, governments and international corporations have also entered the market. By the end of 1987, MTN issues had attracted more than $50 billion in notes outstanding, with investments ranging from $100,000 to $5 million.

Steven L. Lilly, director of corporate finance at CFC, says that MTNs can be a very attractive investment for rural electric systems, citing the safety of the investment, its liquidity, and the rate of return.

"MTNs are highly-rated securities," Lilly says. "Though they are unsecured, MTNs are relatively safe, based on the credit ratings of the issuer. Because they are publicly-traded securities, they can be resold in the financial markets after the initial distribution. And the rate of return generally is above the spread offered by treasury securities, and commensurate with the level of risk involved."

Issuers of MTNs apply these investments to fund other programs and/or use them to match-fund specific assets or liabilities. CFC uses investments from its MTN program to help fund long-term fixed-rate loan programs for its electric, telephone, and associate members and to stabilize its capital base.

MTNs have maturity periods of up to forty years, while the longest maturity period for commercial paper is 271 days. Another difference is that agents generally sell MTNs in the public markets, which means they must be registered with the Securities and Exchange Commission (SEC). Commercial paper is exempt from SEC registration.

The main advantage of MTNs over commercial paper, Lilly says, is the fixed rate of return over a longer term.

"If a co-op has specific payment requirements for a definite period, then fixed interest rates paid on MTNs may be preferable to variable-rate commercial paper earnings as the source of payment," he explains. "Commercial paper rates are reset at each note maturity. For example, a co-op may purchase commercial paper at 9½ percent for 30 days, and roll it over for an additional 30 days and get 8½ percent interest. So, over the length of the investment, the paper averages 9 percent interest. But the co-op doesn't know from period to period what the rate will be. With an MTN, the co-op can, for example, lock into a 9 percent interest rate for two years. The investor can count on that rate for the entire length of the investment."

Lilly points out a number of other differences between MTNs and the traditional investment programs. While MTNs offer fixed rates, like CDs, and pay interest on a comparable basis, MTNs are not insured; CDs are generally insured up to $100,000 by the Federal Deposit Insurance Corporation or the Federal Savings & Loan Insurance Corporation (better known as the FDIC and the FSLIC, respectively).

CDs cannot be sold or transferred to a secondary investor. Early withdrawal from CDs can result in substantial interest penalties. MTNs, though noncallable, can be sold, reassigned, or transferred to a secondary market, with the seller benefitting from the accrued interest earned.

Treasury notes are a direct obligation of the federal government. They are sold at a fixed rate of interest, like MTNs, and pay out interest periodically. Treasury notes may be purchased at a discount, an option MTNs do not generally offer.

Corporate bonds have similar maturities to MTNs but are typically publicly underwritten in blocks of $100 million or more. They can be purchased through investment banking firms or corporate bond traders.

As with any unsecured investment, rural electric systems should plan carefully when investing in MTNs. Most, if not all, MTN issues will have favorable credit ratings, at the very least a rating of Baa3 from Moody's Investor Services and BBB- from Standard & Poor's Corporation, up to the highest possible ratings, Aaa or AAA. CFC's medium-term notes are rated Aa3 by Moody's and AA- by S&P.

Within these ranges, a variety of rates of return are possible. An MTN program with an AAA rating may be a safer investment than one with an A-rating, but the A- program may offer a higher rate of return.

MTNs provide rural electric systems with another investment option, filling the gap between commercial paper and longer-term investments. ●

Calendar of Meetings

National, regional and statewide meetings and conferences. Submit items to: Calendar, Rural Electrification Magazine, *1800 Massachusetts Ave., N.W., Washington, D.C. 20036.*

JUNE 1989

14-16 RESMA Meeting, Radisson Hotel, Lacrosse, Wis.

17-23 NRECA Youth Tour, Washington, D.C.

18-21 G&T Accounting and Finance Association Annual Meeting, Williamsburg Hilton, Williamsburg, Va.

19-21 G&T Accounting and Finance Association Annual Meeting, Williamsburg Hilton, Williamsburg, Va.

SEPTEMBER 1989

6-8 Region IV Meeting, Hyatt Hotel, Buffalo, N.Y.

11-14, 18-21 Central Area Data Processing Cooperative Member Information Conference, Stouffer Concourse Hotel, St. Louis, Mo.

12-14 Region V Meeting, Embassy Suites, Green Bay, Wis.

20-22 Region IX Meeting, Westmark Fairbanks Hotel, Fairbanks, Alaska

26-28 Region II-III Meeting, Riverview Plaza Hotel, Mobile, Ala.

OCTOBER 1989

1-5 National Utility Training and Safety Education Association, Nashville, Tenn.

4-6 Region VII Meeting, Snow King Resort, Jackson Hole, Wyo.

8-11 National G&T Managers Fall Meeting, The Lodge of Four Seasons, Lake Ozark, Mo.

17-19 Region VI Meeting, Radisson South Hotel, Minneapolis, Minn.

24-25 Rural Electric Accreditation Committee Meeting, Holiday Inn Emerald Beach, Corpus Christi, Tex.

31-NOVEMBER 2 Region VIII-X Meeting, Sheraton Centre Park/Arlington Convention Center, Arlington, Tex.

MANAGEMENT SERVICES

Courses and conferences sponsored by NRECA's Management Services Department.

JUNE 1989

11-14 Data Processing Conference, Sheraton Steamboat, Steamboat Springs, Colo.

12-17 Summer School West, The Pointe (at Squaw Peak), Phoenix, Ariz.
- 400.2 "Management Roles and Relationships"
- 410.2 "Management Accounting: Analyzing Financial Decisions"
- 430.2 "Marketing Principles"
- 500.2 "Being a Board Member"
- 510.2 "Current Issues of Board Concern"
- 520.2 "The Effective Board Meeting"

19 Environmental Issues/Title III Seminar, Denver Airport Hilton Inn, Denver, Colo.

21 Environmental Issues/Title III Seminar, Hilton Plaza Inn, Kansas City, Mo.

23 Environmental Issues/Title III Seminar, Sheraton Music City, Nashville, Tenn.

25-28 Chairman of the Board Conference, Sun Valley Lodge, Sun Valley, Idaho

26-29 Utility Credit/Combating Utility Fraud Seminars, Hyatt Regency, Kansas City, Mo.

27-29 Employee Assistance/Productivity Seminars, Sheraton Phoenix, Phoenix, Ariz.

JULY 1989

13-14 Legal Seminar XXIX, Sheraton de Santa Fe, Santa Fe, N.M.

10-15 Summer School Central, Hyatt Regency, Nashville, Tenn.
- 420.2 "Strategic Planning Workshop"
- 450.2 "Effective Communication"
- 486.2 "Effective Negotiating"
- 520.2 "The Effective Board Meeting"
- 540.2 "The Financial and Statistical Report"
- 542.2 "Key Ratios and Trend Analysis"
- 544.2 "Rates: A Guide for Policymakers"

16-19 Territorial Integrity Conference, Stouffer Hotel, Nashville, Tenn.

18-20 Employee Assistance/Negotiating Rights-of-Way Seminars, Hyatt Regency Minneapolis, Minneapolis, Minn.

23-29 Summer School East, Hyatt Regency, Orlando, Fla.
- 410.2 "Management Accounting: Analyzing Financial Decisions"
- 430.2 "Marketing Principles"
- 460.2 "Human Resources Management"
- 530.2 "Planning and Control"
- 575.2 "Understanding Electric Utility Operations"
- 934.3 "Strengthening the Role of the Board"

Advertisers Index

Manufacturers News

VEGETATION MANAGEMENT

Dow Chemical Canada Inc. has received federal registration for *Garlon 4* herbicide, which is used for selective vegetation management along rights-of-way. *Garlon 4* controls a wide variety of deciduous tree and broadleaf weed species that are common problems for Canadian rights-of-way managers, according to one of Dow's technical service specialists. While providing effective control of brush and weeds, *Garlon 4* encourages the development of grasses and other desirable vegetation. For additional information, contact: Phil Feil, The Dow Chemical Company, (517) 636-1000.

New Products

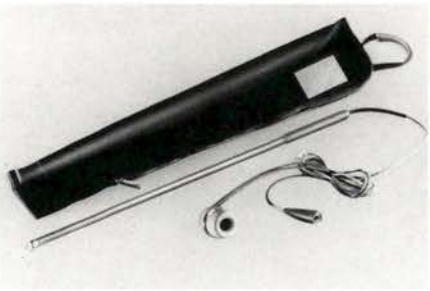
INFRARED IMAGING SYSTEM

A portable, infrared thermal imaging system incorporating a floppy disk drive and designed for preventive

maintenance detection and analysis in the field has been introduced by **AGEMA Infrared Systems**. The *Thermovision 470* can provide real-time, thermal pictures of the condition of dozens of hard-to-access utility components and systems identifying out-of-limit temperatures that normally precede electrical failure. For more information, contact: AGEMA Infrared Systems, 550 County Secaucus, N.J. 07094, (201) 867-5390.

VOLTAGE TESTER

General Machine Products Company has announced a B voltage testing outfit, which assembles in one



kit everything necessary to test any pole or pedestal hardware for foreign voltages. The outfit contains three components: a B voltage tester composed of a 2-foot-high dielectric plastic want/prove, a separate neon indicator assembly for detecting 60-7200 V on any conductor, conduit or lighting fixture, and a voltage plug to test the tester's accuracy. For additional information, contact: William Pfundt, Marketing Manager, General Machine Products Company Inc., 3111 Old Lincoln Hwy., Trevose, Pa. 19047.

BREAKOUT CABLES

Superior Optics is offering breakout cables intended for premise building connections. According to the manufacturer, the cables are suited for computer installations, local area networks, short-haul data transport and process control systems. They are also easy to connect and should be considered when the designer wants to avoid expensive splices, patch panels and breakout kits. For additional information, call: Pete Spehr, (404) 427-5556.

METER RECORD SYSTEM

Utility Resources Inc. has available *MRS*, a comprehensive meter records system that allows an electric utility to maintain and update information on meters in inventory and in service. According to the manufacturer, using *MRS* a utility has the capability to track meters and devices on a timely basis. The modular design of *MRS* enables the system to be maintained with a minimum of personnel. *MRS* also provides on-line editing and validation of data to ensure accuracy, reduce error determination time and eliminate the need for keypunch services. *MRS* reduces costs associated with meter handling by placing control of meter records and related data in the hands of the user. For additional information, contact: Utility Resources Inc., 17440 Dallas Pkwy., Dallas, Tex. 75252, (214) 248-3372.

INSECT REPELLENT

Tec Laboratories has available a 10-hour insect repellent recommended for defense against ticks. According to the manufacturer, one application lasts all day long and repels mosquitoes, ticks, fleas, chiggers, biting flies and bees. To obtain additional information, contact: Tec Labs, P.O. Box 1958, Albany, Ore. 97321.

MOBILE INVERTER

The Heart Interface is a mobile inverter system that converts 12, 24 or 32 volts DC into 120 volts AC power. Units are available with output ratings from 600 watts to 3,000 watts. According to the manufacturer, they can sustain starting surges up to three times

their continuous output rating. For additional information, contact: **Turner Electric Corporation**, 9510 St. Clair Ave., Fairview Heights, Ill. 62208.

ENCLOSURE MARKERS

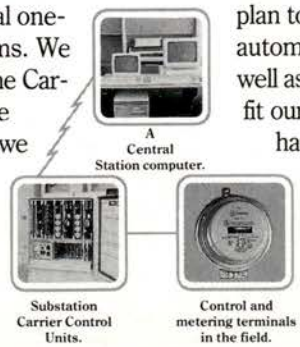
Uticom Systems Inc. has developed markers to indicate yearly inspections of enclosures. The markers are manufactured from permanent adhesive and silkscreened ink. The markers can be used on the inside or outside of enclosures and are designed to withstand ultraviolet light, oils, salt, moisture and temperature extremes. For more information, contact: Uticom Systems Inc., P.O. Box 312, Easton, Md. 21601, (301) 822-9644. ●

Edited by Jamie Blake, Advertising

"EMETCON helped flatten our demand curve. So now we can buy power at a lower rate."

Since their Westinghouse ABB EMETCON™ Automated Load Control System was installed in 1982, South West Minnesota Cooperative Electric has realized substantial savings on purchased power. And that's just the beginning of the benefits EMETCON has given them. Here's what Virgil Winter, SMCE's manager, has to say.

"We purchased EMETCON after a complete investigation of several one- and two-way load control systems. We chose the EMETCON Power Line Carrier System because it offered the proven features we needed. But we also had some unique requirements, such as incorporating bookkeeping on the same computer and integrating it with automated meter reading so we could automatically issue bills.



Westinghouse ABB took the time to work with us, made sure we got exactly the system we needed, and offered the service and commitment we wanted.

"Our EMETCON System has reduced demand significantly, allowing us to buy power at a lower rate. Today, the same computer handles load management, automated meter reading, billing and accounting, to help us operate more efficiently. In the future, we plan to use EMETCON for automated feeder control, as well as other functions to benefit our customers. EMETCON has never failed to accomplish what we set out to do with it."

EMETCON is a simple, proven, modular Automated Distribution System that lets you start small, then expand whenever you need to. The two-way communications capability of the system permits expansion to other functions like automatic meter reading, load survey and feeder automation.

EMETCON has helped more than 90 co-ops, municipals and investor-owned utilities to reduce the amount of purchased power or delay their need for additional generating capacity. It works for South West Minnesota Cooperative Electric. And it can work for you.

For more information on how EMETCON can help you get more efficient load control, feeder automation, remote metering and other control operations, contact your local Westinghouse representative. Or write EMETCON, Westinghouse ABB Power T&D Company, P.O. Box 9533, Raleigh, NC 27611.

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HELP WANTED

JOB TRAINING & SAFETY INSTRUCTOR We are seeking a person who is familiar with distribution and transmission construction maintenance and safety procedures. Must have the ability to develop and present job safety and training programs to electric distributors. Travelling required. Excellent fringe benefits. When sending resume please state salary expectations; qualified applicants only. Send resume to: **Ken Fonnesbeck, Ruralite Services Inc., P.O. Box 558, Forest Grove, OR 97116 by June 30, 1989.**

PLANNING ENGINEER

CENTRAL IOWA POWER COOPERATIVE, a rural electric generation and transmission cooperative serving fifteen member systems in Iowa, is seeking a Planning Engineer. The Planning Engineer is responsible for: conducting power flow studies to examine line and substation operations, losses, and potential system problems; forecasting short- and long-term transmission line and substation requirements and from the forecasts, developing facility size, location and installation date recommendations; preparing the long-range Construction Work Plan, incorporating relevant studies, cost estimates, alternatives and justifications for planned projects; and preparing annual distribution system tap planning reports.

Qualified candidates will have a B.S. in Electrical Engineering, Power Option plus two to four years of experience in system planning. Familiarity with personal computers and mainframe PSS/E power-flow software is beneficial. Good writing and speaking skills are preferred.

Central Iowa Power Cooperative offers competitive benefits and salaries.

Qualified applicants should forward their resume to:

Personnel Department
Central Iowa Power Cooperative
P.O. Box 2517
Cedar Rapids, IA 52406

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ELECTRIC UTILITY DIRECTOR The City of Cushing (population 7,500) is accepting applications for the position of electric utility director. The Cushing Municipal Electric Utility System includes facilities for the generating, transmission and distribution of electric power and energy in the City of Cushing and surrounding environs. The system serves 4,579 customers with a 1988 peak load of 21,000 kW. Cushing operates a 21 kW generating plant with AGC and three 69/13.2 kV substations. Desire applicants experienced/knowledgeable with 4.18 kV and 13.2 kW distribution systems, 69 kV transmission systems, electric power generation, SCADA, annual budget preparation and supervision of personnel. The applicant must have, or have the ability to obtain, an electrical contractors license from the state of Oklahoma. Salary is commensurate with experience. Send resume, salary history and references to: **Leroy D. Alsup, City Manager, P.O. Box 311, Cushing, OK 74023.**

VICE PRESIDENT, RURAL UTILITY LENDING The St. Paul Bank for Cooperatives, which provides credit to nearly 600 cooperatives and rural utilities in the Midwest, is seeking candidates for rural utility lending position. The individual will be responsible for the development and implementation of business plans, loan participation relationships, REA lending and guarantee programs, leveraged lease transactions, tax exempt financing, public and private debt placement, and collateral sharing agreements. Position requires eight to 10 years experience in commercial lending, including rural electric telephone utility lending. Bachelors degree in economics, finance, business, engineering or related field or education and training equivalent; graduate degree preferred. Interested applicants should send resume and salary requirements to: **Jimi Hodge, 375 Jackson Street, St. Paul, MN 55101.**

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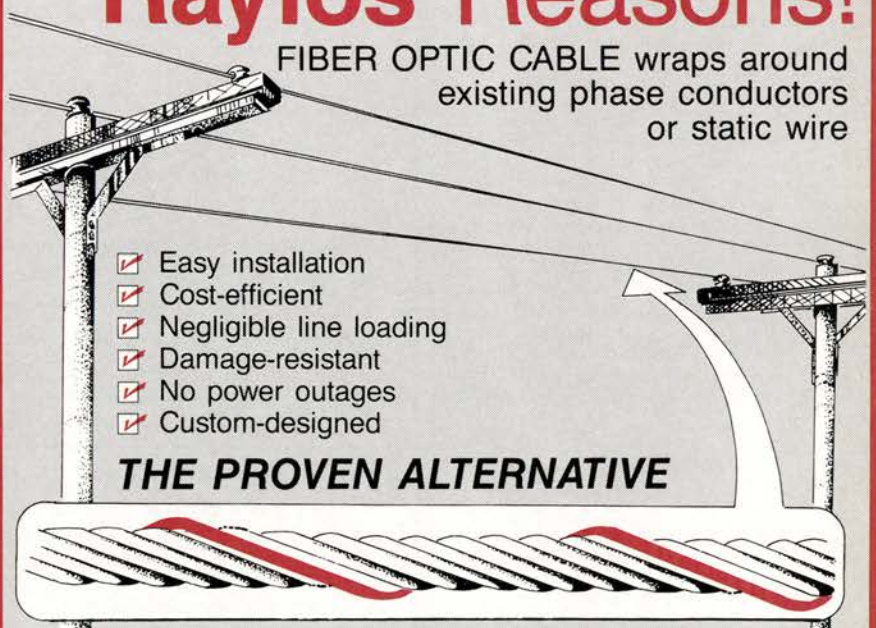

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FIRST CLASS LINEMAN New Hampshire Electric Cooperative Inc., located in the White Mountains region of central New Hampshire, is seeking a first class lineman to work out of the Plymouth office. The lineman must be capable of working high voltage unassisted and be familiar with all phases of line work. Applicants should contact: **Jacalyn Thompson, Personnel Administrator, New Hampshire Electric Cooperative Inc., RFD 4, Box 2100, Plymouth, NH 03264, (603) 536-1800.**

ELECTRIC UTILITY ENGINEER A growing rural electric distribution cooperative serving more than 40,000 consumers in lower Delaware seeks applicants for highly qualified electrical engineer. Successful candidate with BSEE and Associate EE should have a minimum of five years electric cooperative experience, with a well-rounded background in all aspects of an electrical distribution system. Strong communications skills and leadership abilities. Located on the Delmarva Peninsula, convenient to ocean resorts and several major cities, the service area contains excellent educational and medical facilities. Good benefit package, salary commensurate with experience and qualifications. Reply in confidence with resume and salary history to: **Mrs. Fay P. Shockley, Manager of Personnel, Delaware Electric Cooperative Inc., P.O. Box 600, Greenwood, DE 19950.** An equal opportunity employer.

JOB OPPORTUNITIES Growing midwest consulting firm has job opportunities for individuals who are self-motivated and interested in providing quality services.

- **Distribution Field Staker** Individual needed for design of distribution lines for our REA clients. Job includes staking, contract preparation and field observation of contract construction. Must be familiar with REA units and NESC.
- **Line Inspector** Individual needed for inspection of REA client's lines. Will be checking for bad poles and clearance problems. Must be familiar with REA units and NESC.

Comprehensive benefit plan including company vehicle and profit sharing plan. Send resume and salary requirements to: **Ledbetter, Toth & Associates, P.O. Box 10062, Springfield, MO 65808.**

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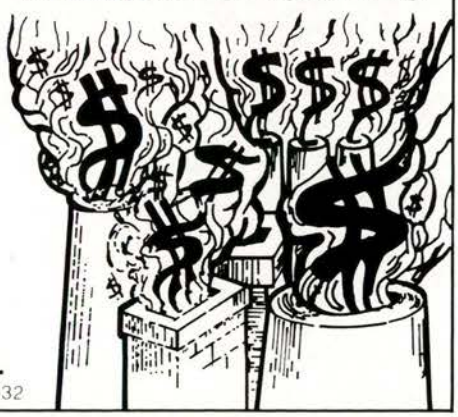

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Last Word

LONG, WET NIGHT'S WORK

By Debra Bruno

When 13 inches of rain fell overnight on Rusk County in eastern Texas's pine forest country last March, creeks overflowed onto county roads and the water built up behind Nix Lake Dam until it burst. Thirteen families living near the dam were stranded because the top of the dam is also the roadway into their area, according to Buddy Bankhead, manager of member services at Rusk County Electric Cooperative in Henderson.

Dozens of roads and bridges were washed out, utility poles were uprooted and a major water line broke, forcing nearby residents to boil their drinking water.

During the height of the storm, a Rusk County Electric line crew drove into a low-lying area to restore power. Concentrating on their work, the linemen didn't notice that the water had risen behind them until their truck was trapped. They tried to drive through the flood, but the engine drowned out. They radioed for help, and the co-op sent out a tow truck.

Carl Orr, the driver of the tow truck, says he was able to reach the line truck, but the water kept rising behind him. "When I went through, the water was about two or three feet deep. Within 30 minutes, it was six feet deep," Orr recalls.

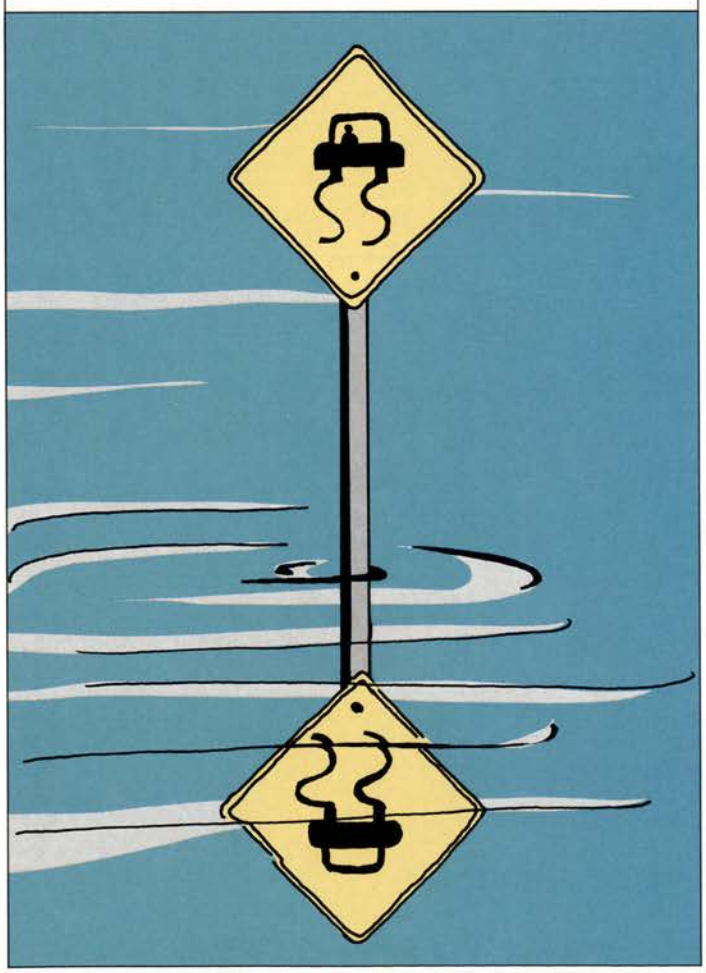
Orr contacted the co-op's dispatcher, who called an outside tow truck. It wasn't long before that truck, a big International diesel, was up to its doors in the flood. The driver swam back to the main road and called for more help.

The lineman and Orr waded away from the stranded trucks onto a dry knoll just off Highway 43, where they spent the night.

Meanwhile, Doris Hall, a pianist from nearby Antioch, was returning home late at night from a religious revival meeting when she decided to take a shortcut on a county road leading from one highway to another. Hall saw that the road was covered with water, Bankhead says, but she didn't think it was deep.

When her car started to float, she climbed to the roof. When the car got caught up in a fast-flowing current, Hall tried to wade to safety but was swept downstream by the current.

She managed to catch hold of a standing utility pole. Soon, a barbed wire fence, also caught up in the flood, pinned her to the pole. Hall spent the entire night trapped against the pole, cut by the wire, and chilled by the rushing water. Huge chunks of the blacktopped road, washed away by the flood, smashed into her. One piece broke her leg.



RANDY FLETCHER

Early the next morning, David Guy, Rusk County Electric's construction superintendent and two other co-op employees were out in Guy's 15-foot aluminum boat surveying the damage to the co-op's lines when a passerby told them about Hall.

When the two employees, Jeff Marshall and Neely Endsley, reached Hall, they thought she was dead. The water was up to her chest, and she was slumped over. "She was cut up considerable," Marshall says. The men used lineman's pliers to cut the barbed wire away from her, and then carried her to a pickup truck and drove her to Henderson Memorial Hospital, where she was admitted to the intensive care unit. (She was released from the hospital a few days later and is now fully recovered.)

"It took hospital workers several hours just to get her body temperature up," Bankhead says.

Guy spent the rest of that morning cutting fallen trees away from power lines. Sawing one big tree that was hanging on a main line took about two hours, he says, and, from the boat, a good sense of balance.

Guy also used his boat to rescue the four co-op employees who had been marooned overnight. When they saw him, he says, they didn't say much except to ask for cigarettes.

Despite all of the efforts of co-op, county and Henderson city crews, one county man drowned in his car when the dam collapsed and flooded Highway 43. ●

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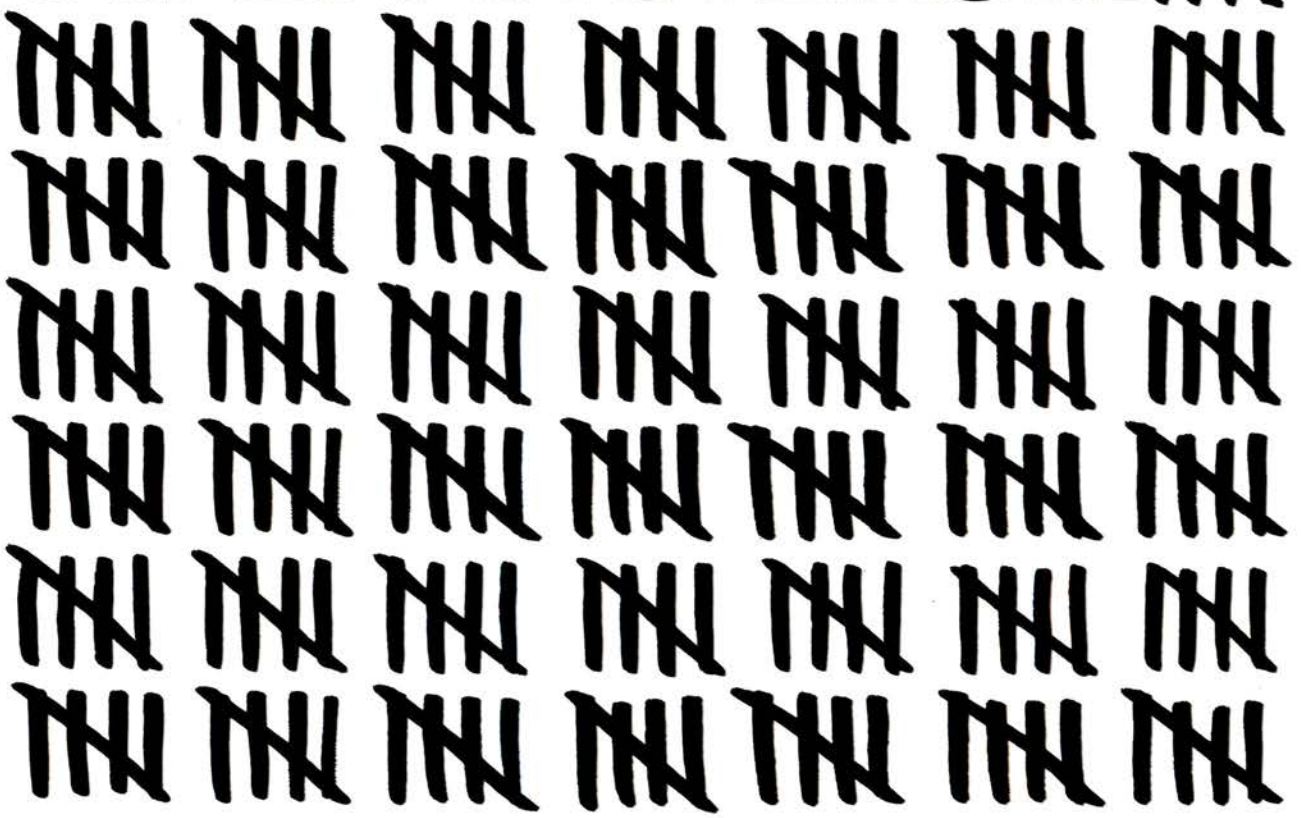

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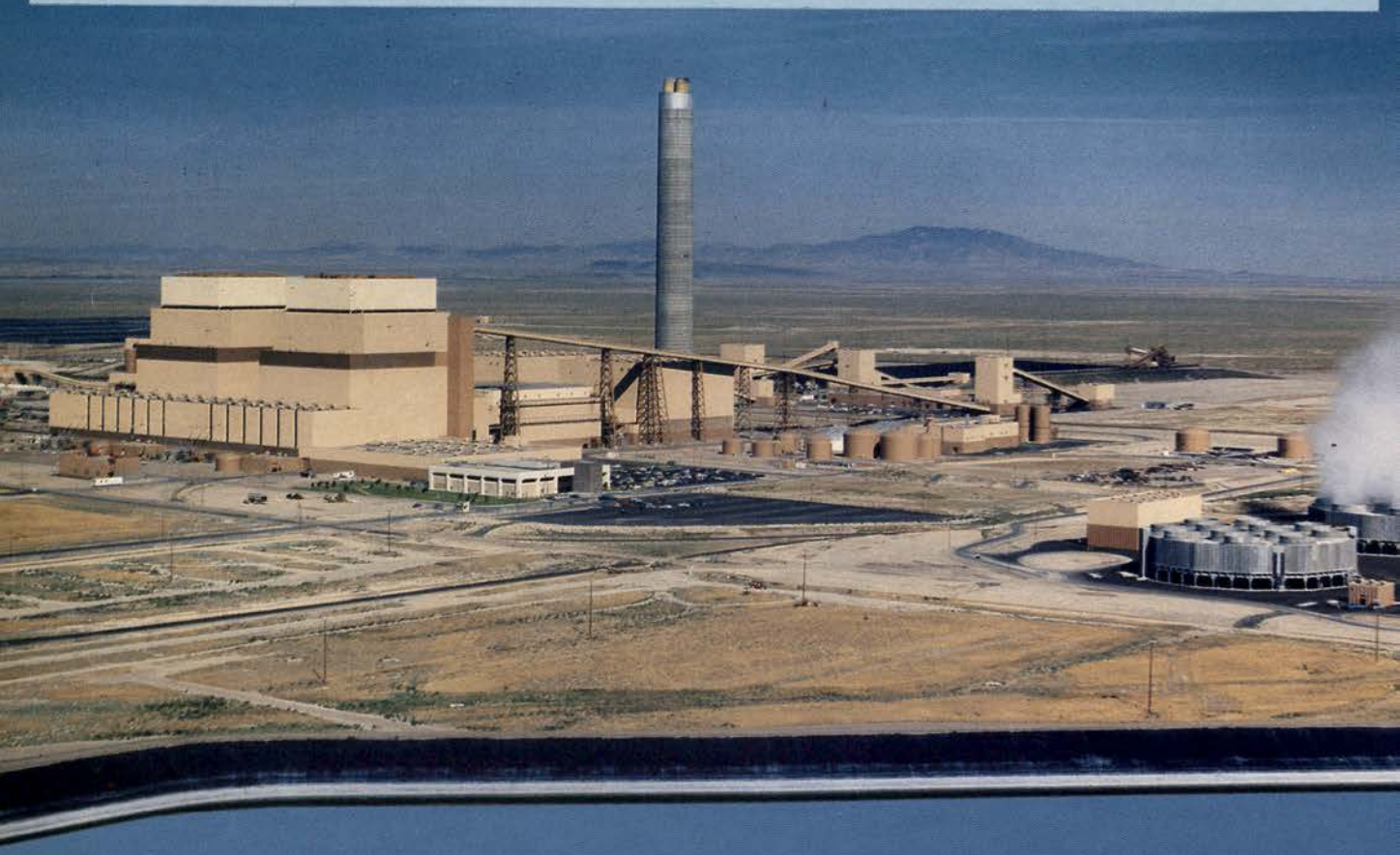

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The owner, Intermountain Power Agency (IPA), handled the successful revenue bond issue. IPA is comprised of 23 Utah municipalities. The Los Angeles Department of Water and Power, largest individual utility purchaser, was project manager.

Black & Veatch, which designed the facilities, coordinated all contracts on a fixed-price basis, with strong incentives to meet schedule goals. A design liaison team was on site to coordinate design office and construction activities. Shown are Rod Clark (r.), Intermountain site manager, and Bob Miller, Black & Veatch field manager.

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