



Illinois
R.E.N.
RURAL ELECTRIC NEWS
December, 1972

National News Notes

Senator calls for national energy conservation policy

■ Senator Henry M. Jackson, Washington, recently called for a national policy on energy conservation and said the next Congress must face up to the issue.

Senator Jackson is chairman of the Senate Committee on Interior and Insular Affairs, which is conducting a National Fuels and Energy Policy Study. He made the statement in releasing a survey of energy conservation opportunities prepared for the Committee.

"With energy consumption slated to double in the next two decades," Jackson said, "our nation can no longer tolerate waste and inefficiency or ignore the opportunity to capitalize on the potential for improved conservation practices as a means of reducing total energy demand."

"Our extraction of energy resources has been wasteful. Our use of these resources in every facet of our lives—from driving cars, to heating homes to producing electricity, to electric intensive industrial processes—has been seriously inefficient."

Jackson went on to call for a "major new national research and development program by both industry and government to create more efficient energy systems and to develop alternate energy sources."

Government also stressing energy conservation

■ Energy conservation was also on the minds of the many speakers at the Co-opmanship Conference held in St. Louis recently.

Robert H. Kupperman, Office of Emergency Preparedness, (OEP), reported on a study recently released by OEP that stressed conservation of energy as an effective way of meeting the energy crisis.

Kupperman estimated that, "if all the measures which our report considers were adopted, we would be able to reduce energy demand by 1980 by as much as the equivalent of 7.3 million barrels of oil per day."

Kupperman emphasized the word equivalent because in fact the energy savings would be spread across all types of fuels and only a portion would be applied to oil itself or to oil imports.

"This figure," Kupperman added, "represents a considerable energy savings—about two-thirds of the projected U.S. imports for 1980."

TVA pollution control costs double

■ One million dollars a week—that's what the Tennessee Valley Authority (TVA) estimates that its environmental protection programs will cost during the current fiscal year. The figure is expected to double next year.

But what does this mean to consumers? TVA estimates this would mean an average cost per family of from about \$33 a year more for actions already planned for pollution control to as much as \$360 a year under their maximum cost estimate.

Part of this cost, TVA says, would come directly through home electric bills and part through higher cost of goods and services and higher taxes resulting from increased rates to business and government.

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COVERS—(Front) It's the first Christmas for little Stephanie Miller, daughter of Mr. and Mrs. Kenneth Miller of Golden, in western Illinois. Her mother, Deane, says it will be a great time. Stephanie obviously agrees, but sometimes strange photographers have difficulty sorting out her rapid fire, enthusiastic comments. (Back cover) Christmas decorations of the Richard Doyle family at Watseka r.r.4 in eastern Illinois are famous near and far. Thousands visit the Doyle home annually. You're invited too. (See Page 10.) Photographers, front, John F. Temple; back, Richard D. Haney.

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Are We Full-Service?

If we are in the midst of an energy crisis, how can electric cooperatives justify becoming involved with rural development programs?

The answer—they have to become involved. Not only is it their job, but it is their duty.

An answer to the energy crisis has to be found. Many say our national survival depends on it. And there is no doubt in our mind that it will be found.

But beyond that, we have to become what Robert D. Partidge, general manager of the National Rural Electric Cooperative Association, calls a "full-service cooperative."

IN THE PAST, some electric cooperative leaders have said: "We have supplied our area with the power that it demands. Isn't that our purpose for existence?"

That's an interesting point. It's true that electricity is one of the fundamental components of a better way of life. The pioneers of the electric cooperative movement deserve much credit for making this dream become a reality.

But what about water and sewage systems, fire protection, adequate schools and medical services? What kind of job opportunities does a rural area offer?

Each day we see more of our rural residents leave the area for that 'better deal' in the larger cities. And, if the trend continues, some of our cooperatives might suffer a loss in membership which would be economically unbearable.

CAN ELECTRIC cooperatives do anything about these situations? Many have.

Illinois electric cooperative members take pride in the fact that many of their cooperatives are "full-service ones."

The leaders of these cooperatives have shown dynamic leadership in their communities by paving the way for better housing, schools, community colleges, hospitals and employment opportunities.

Some have even been instrumental in forming water supply districts—something that is long overdue in some parts of Illinois.

BUT SHOULD the electric cooperative leaders get all the credit? No, not really. It is the members who decide if their cooperative is "full-service" or not.

Although electric cooperatives have the know-how, ability, and resources to help make their areas better places to live, they don't have the power or the right to decide what should or should not be done.

That my friend, is up to you.

Cooperatives Discuss New

By Ron Jenkins

Can the nation's approximately 1,000 consumer-owned electric cooperatives serving nearly 25 million persons across the United States help solve our energy crisis?

And at the same time, can they help revitalize rural America?

These were some of the questions considered recently by nearly 300 representatives from across the country meeting in St. Louis, Missouri, for the fifth annual Copmanship Conference.

The consensus of some of the leading authorities in the electric cooperative and community development fields said "yes you can."

So did many of the cooperative managers and key personnel attending the three-day meeting. Many are already ahead of the game because of past hard work. But what new directions need to be taken?

ROBERT D. PARTRIDGE, general manager of the National Rural Electric Cooperative Association, talked about some of these new directions:

"It is our concern (electric cooperatives) for mankind in these troubled days that is giving us new directions, revealing greater challenges, and showing us stimulating new opportunities.

"These are challenges and opportunities that must be accepted if the electric cooperative movement is to continue."

One of the greatest challenges facing electric cooperatives is keeping pace with the revolutionary changes that are taking place in the electric industry.

"We dare not let ourselves be frightened by the rapid pace of change," Partridge said. "Most of all, we dare not fear to change."

Partridge went on to say although our industry is filled with uncertainty, there are a few things that you can depend on. One is that the energy crisis will get worse before it gets better.

HE SAID that some of the electric cooperatives have not yet felt the energy crunch. But they will have to learn to live with it—and help their members learn to live

with it—with a minimum of difficulty.

"It's not merely a matter of convenience," he emphasized. "It's a matter of jobs, a matter of national security, and perhaps, eventually even survival."

But all is not gloom and doom. In comparison with other energy industries, electric's future is bright indeed.

Solar energy fusion, the fast breeder reactor, are all future possibilities for generating electric power without harming the environment.

I REALLY believe that as we look at the long range view, our energy crisis is temporary," Partridge said. "By temporary I mean that we will begin to see some relief in the next fifteen or twenty years as we develop our technology. Meanwhile we will have a problem. And I am sure that electric cooperatives will want to do their part in total energy conservation programs."

This is something that is not new to the electric cooperatives. Electric cooperatives have always worked to make sure that consumers use electricity in an efficient non-wasteful way. They have emphasized the need for quality home construction and they have been leaders in up-grading insulation standards.

But beyond finding new answers to our energy crisis, Partridge suggested that electric cooperatives become "full-service cooperatives."

"ONE OF the greatest services you can provide and one of the best things you can do for the future of your system is to get actively involved in community development," Partridge said.

"The new Rural Development Act of 1972 offers us a great opportunity," he added. "Now a national priority, this new rural development effort can effect the growth of every single system represented here.

"Here is the opportunity for you to serve your people, to protect your territory, to exercise some



Dr. Peter C. Goldmark

Directions for the Future

control over your future growth through community service," he said. "Here is the opportunity for electric cooperatives across this nation to experience the wonderful unity of purpose that gave them birth."

Dr. Peter C. Goldmark, president of Goldmark Communications Corp., echoed Partridge's thoughts on rural development by calling for a "New Rural Society."

A new rural society that would stem high-density urban living which has crowded more than 90 percent of the population into less than 10 percent of the country's livable land and has placed society on a "collision course with survival."

HE WARNED that high-density living in urban areas—in which thousands of people are packed into a city block—has caused runaway conditions in crime, pollution, transportation and social problems. "These problems in the larger cities are no longer manageable," he said, "and we must act now to stem this tide."

Goldmark called for the imaginative uses of communications technology—such as cable television, videophones, facsimile and broadband communications channels—to create a "New Rural Society" to attract businesses and provide people with employment and economic opportunities now available in large urban concentrations.

He stressed that higher education needs are now unfulfilled in rural areas, health care is inadequate, housing is sometimes poor and people are isolated from any variety of worthwhile cultural and entertainment pursuits.

"BUT ALL of this can be changed," he said, "with your help and the active enforcement of the Rural Development Act of 1972."

Representatives also heard from Robert H. Kupperman, deputy assistant director for information and analysis, Office of Emergency Preparedness, on what the government was doing to help ease the energy crunch.

Kupperman explained that until recently, the idea of conserving energy resources was a rather remote concern of the American people. The United States has long enjoyed an abundance of oil, gas, coal, and electric power.

Today we have become a highly industrialized and technological society—one whose economic health and national security depends on the reliable flow of vast amounts of energy. Our demand for energy has become almost insatiable.

"WE NEED to find more petroleum, more gas, and we need to develop new sources of energy such as breeder reactors and eventually fusion power," he said.

"But it is also equally important that we do not use our energy supplies wastefully," he stressed. "We can no longer afford the extravagances of the past. All of us must begin a conscious deliberate effort to conserve our energy resources and to use them more efficiently."

One area which offers opportunities for substantial energy savings is the transportation sector.

According to Kupperman, although there have been improvements, the overall efficiency of transportation has in many cases decreased. And transportation consumes 25 percent of our total energy resources.

"TO CONSERVE energy in the transportation sector," he said, "we must examine and possibly redress the balance between these transportation modes."

Conservation of energy can also be achieved by having heavy users of electricity operate in "non-peak" hours. Electric cooperatives have for some time been an advocate of such a policy.

"In the electric utility industry as in all sectors of the economy, we can take effective measures to conserve our energy and to use it more efficiently," he said. "But energy conservation cannot be a substitute for developing new sources of energy supplies."

And so, on and on the speakers continued. A whole array of brilliant specialists who suggests new ideas and answers to help cooperatives meet the future.

How successful was the conference? The answer to that question will come from the cooperatives themselves. It will all depend upon which "direction" they choose to take.



From left, David R. Barbery and Victor G. Ketten of Greenville, Raymond C. Weiss of Champaign and Eldon E. Turley of Greenville discuss the morning speakers over a cup of coffee.

How You Can Save With Electricity

Question: What's one of the greatest bargains in the country today?

Answer: Electricity, of course. Anyone knows that.

Question: All right. But HOW do I know?

Answer: Ask Lyle E. Dunham, director of the Association of Illinois Electric Cooperatives' Department of Member Services. His answer will go something like this:

"The picture is changing somewhat. But a good many Illinois electric cooperatives haven't altered their rates since the cooperatives were founded a generation ago.

"Take Clinton County Electric Cooperative, Inc., of Breese, for example. Recently its board president, Menard B. Luebbers Jr., announced that some rate increase will probably be necessary sometime in 1972. Too bad? Yes. But Manager Joseph H. Heimann pointed out that this would be the first such increase since the cooperative was founded in 1939. That's good."

EVEN SO, no one wants to waste electricity. And electric cooperatives would much rather help their members use electricity more effectively than bill them for wasted power.

You can really save money.

"Consider home heating and cooling," Dunham said recently. "Many of our members could make considerable savings by looking into the advantages of really efficient insulation."

As recently as 10 to 15 years ago many if not most home builders were convinced that the "dead air space between inside and outside walls was enough 'insulation' for anyone."

"More recently," Dunham observed, "contractors have realized that where you have a cold wall outside and a warm wall inside, you have a circulation of air within your 'dead air space,' and you have a serious heat loss."

TODAY ELECTRIC cooperative heating specialists and others with up-to-date information recommend a minimum of six inches of high-quality insulation in a ceiling, four inches in the walls and two inches under the floor.

"Most cooperative power use advisers now are recommending ten inches of insulation in attics," Dunham said. "It pays."

"It pays not only in electricity savings. It pays in comfort. It saves through better health. It blocks out much of summer's heat and makes one's home more enjoyable throughout the year."

INSULATION materials have changed, also. They've greatly improved. One early type was rock wool. It worked fine but it was found to settle and to absorb moisture, losing insulative effectiveness.

"Since then fiberglass, cellulose fiber and synthetic materials are providing extremely effective protection. Most blown insulation is cellulose. It's competitive in price,



Lyle E. Dunham

fills all voids and can readily be applied to the most desirable depth."

And while you're about it, Dunham said, don't overlook the obvious: Well-fitted storm windows also save money. They reduce both heating and cooling costs and add tremendously to comfort. Few homes are built without them today.

"In most cases the added cost of storm windows can be offset by reductions in heat and cooling costs."

In any event, make sure your home is tight, with insulation and

storm windows and any little openings around windows sealed with caulking compound.

BUT YOU know all that.

You also probably know that sometimes you can save money by simply getting rid of that nicely operating 25-year-old electric stove or refrigerator.

"It frequently pays to get a new one," Dunham said seriously. "There have been major improvements so that operating costs have come down—and as an added bonus, you get far more convenience from your new unit.

There's still another and very important way to save on your electricity bill: get acquainted with the people at your electric cooperative, particularly your power use adviser.

These hard-working individuals are storehouses of valuable information. They'll gladly help solve electrical problems. If you're building a new home they'll carefully figure how much electric heat will cost for installing and for operation. They're quite accurate.

They'll answer your questions about insulation and wiring. There's no charge for their skilled services.

OF COURSE they'll tell you that electric heat, and the clean heat, is growing sensationally in popularity as more people learn of its efficiency, effectiveness and economy.

One industry executive recently reported:

"The warm air furnace market will change dramatically over the next five years. Gas-fired units are expected to grow at an annual rate of only three percent. Oil-fired units should show an eight percent surge next year and settle to a four percent annual growth rate. But electric furnaces will grow at an 17-18 percent annual growth rate and, in 1974, should overtake oil-fired equipment in terms of total units shipped."

Those cooperative power use advisers are highly trained, knowledgeable people—good people to know, Dunham said. They're your friends.

They, and all of us, would like to wish you all a very Merry Christmas. And a Happy New Year, too!

Industries Locate In Areas Served By Electric Co-ops

Many industrial firms are locating in rural areas throughout Illinois and the nation as new highway systems provide improved avenues for the transportation of products.

One cooperative which is experiencing new industrial membership is Wayne-White Counties Electric Cooperative, Fairfield.

Two firms which have recently located in the cooperative's service area are Kasha Industries, Inc. (KI), 1 Plastics Lane, Grayville, and Square Post Buildings (SPB), Fairfield.

HARRY MAYFIELD, manager of SPB, which is located on five acres a few miles south of Fairfield on Route 45, explained the reasons for selecting the site:

"We wanted near the proposed intersection of Interstate 64 and Route 45. Our initial sales territory is a 100-mile radius from Fairfield. We'll expand into Indiana, Kentucky and Missouri as we grow. So it still is important to be near the interstate system.

"We also wanted in Wayne-White Electric's service area. The cooperative has a fine reputation of providing dependable power and service. We just can't afford to have our plant shut down when we need to be producing."

SPB specialized in pre-cut buildings for farm, commerce and industry. A subsidiary company of Fairfield's Southern Illinois Lumber Company, it plans to manufacture pre-cut trusses for new homes in the future.

The firm requires three-phase power for two hydraulic machines: a shearer which cuts the all steel siding for the buildings and a Lumbermate gantry press which applies 2,500 pounds of pressure per square inch to the metal clamps which "nail" the lumber together to form trusses.

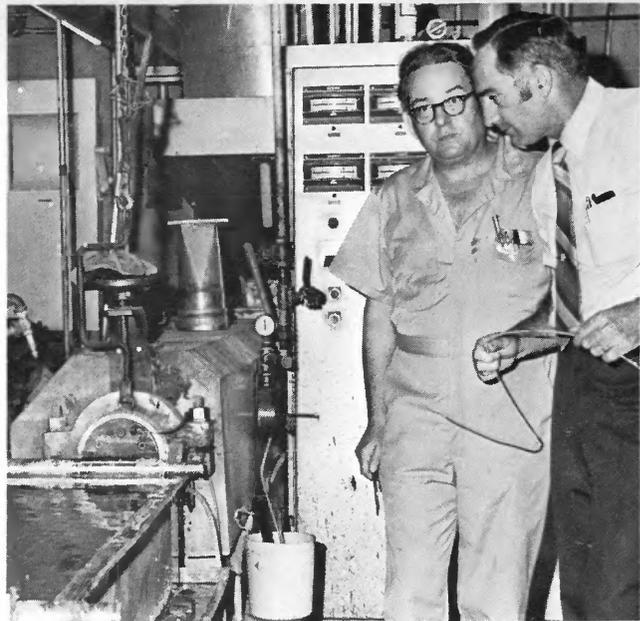
EDWIN E. KASHA, president of KI, the other new plant in Wayne-White's area, is a plastics consultant who produces the coloring for plastic manufacturers. He requires three-phase service to operate his machines.

A graduate of the University of Pittsburgh in chemical engineering, Kasha started his firm two years ago at Grayville. He wanted easy access to Interstate 64 just south of town. He serves customers located throughout the midwest as well as Florida, Texas and California.

"A LOT OF TALENT is available in rural areas if it's given a chance," Kasha said. "Unless a community has developed its industrial growth though, this young talent has no other choice than to seek employment in larger cities."

Kasha, who believes that young people should be exposed to vocational training, or on-the-job experience, while in high school, commented on rural community development.

"For a community to grow and prosper," Kasha said, "its leaders and citizens must forget the good old days, get out of their antiquated ways and entice industry to locate in their area."



Ivan Holler, left, public relations director, Wayne-White Counties Electric Cooperative, Fairfield, and Harry Mayfield, manager of Square Post Buildings, Fairfield, examine a metal fastening device that has been pressed into a board.



Edwin E. Kasha, president of Kasha Industries, Inc., a plastics firm that employs 20 persons at Grayville, explains his plastic coloring extrusion process to Holler.

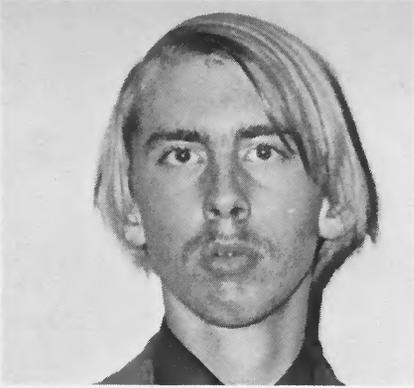
"Related industry will follow industry if it knows where other firms have located. But it takes exposure to do the job properly."

"Industry is willing to look at rural areas but they have to be shown the facts. It takes more than an industrial site; in fact, if an industry is sold on an area, it'll find and develop its own site."

As more and more industrial loads appear on their lines, Illinois electric cooperatives—such as Wayne-White—are maintaining an active interest in community and area development.

After all, industrial and community growth means a more prosperous cooperative.

4-H Members Reap Rewards From Projects



Daryl Quigg, Jacksonville
Illinois Rural Electric
Co., Winchester



Dale Cash, Paris
Edgar Electric Cooperative
Association, Paris



Earl Burkybile, Casey
Coles-Moultrie Electric
Cooperative, Mattoon



Wayne Mowers, Toulon
Illinois Valley Electric
Cooperative, Inc., Princeton

Twenty top 4-H members with electricity projects were selected from thousands of members in competition for the 20th annual, three-day tour of Chicago recently.

The tour is sponsored by the Illinois Farm Electrification Council (IFEC), General Electric Company, Illinois Agricultural Association, Commonwealth Edison Company and the First National Bank of Chicago, each were hosts for special events during this year's tour.

While in Chicago, the group of outstanding young people—many of them already students at Illinois' universities—visited several firms involved with the electric industry.

STOPS included Underwriters' Laboratories, Chicago Lighting Institute, Quaker Oats' test kitchen, Zenith Radio Corporation, Lightolier and the opening of the Chicago Board of Trade.

"We are always glad to help sponsor the trip to show these fine 4-H members the many facets of the electrical industry," commented Jim Leming, chairman of IFEC's Agricultural and Home Economics 4-H Committee and one of the trip's chaperones. Leming is the public affairs representative for Coles-Moultrie Electric Cooperative, Mattoon.

EIGHT of the 20 winners were members of families belonging to Illinois electric cooperatives. They were: Earl Burkybile, Casey; Dale Cash, Paris; Terry Epplin, Pinckneyville; David Ladage, Auburn; Melody Smith, Oreana; Diane Stein, Brownstown; Wayne Mowers, Toulon, and Daryl Quigg, Jacksonville.

Other winners on the tour were Donna Apel, Atlanta; Judy Barksdale, Kinmundy; Ronald Craddock, McLeansboro; Eloise Finck, Hanna City; Joan Hankes, Sugar Grove; Donald King, Amboy; Cathy Linker, New Windsor; Jan Sailer, Carmi; Carl Schleifer, Barrington; James Shaffer, Kinmundy; Diane Smith, Prophetstown; Yvonne Walker, Hamilton and Terry Gustufson of Henry County.



Diane Stein, Brownstown
Southwestern Electric
Cooperative, Inc., Greenville



Melody Smith, Oreana
McDonough Power
Cooperative, Macomb

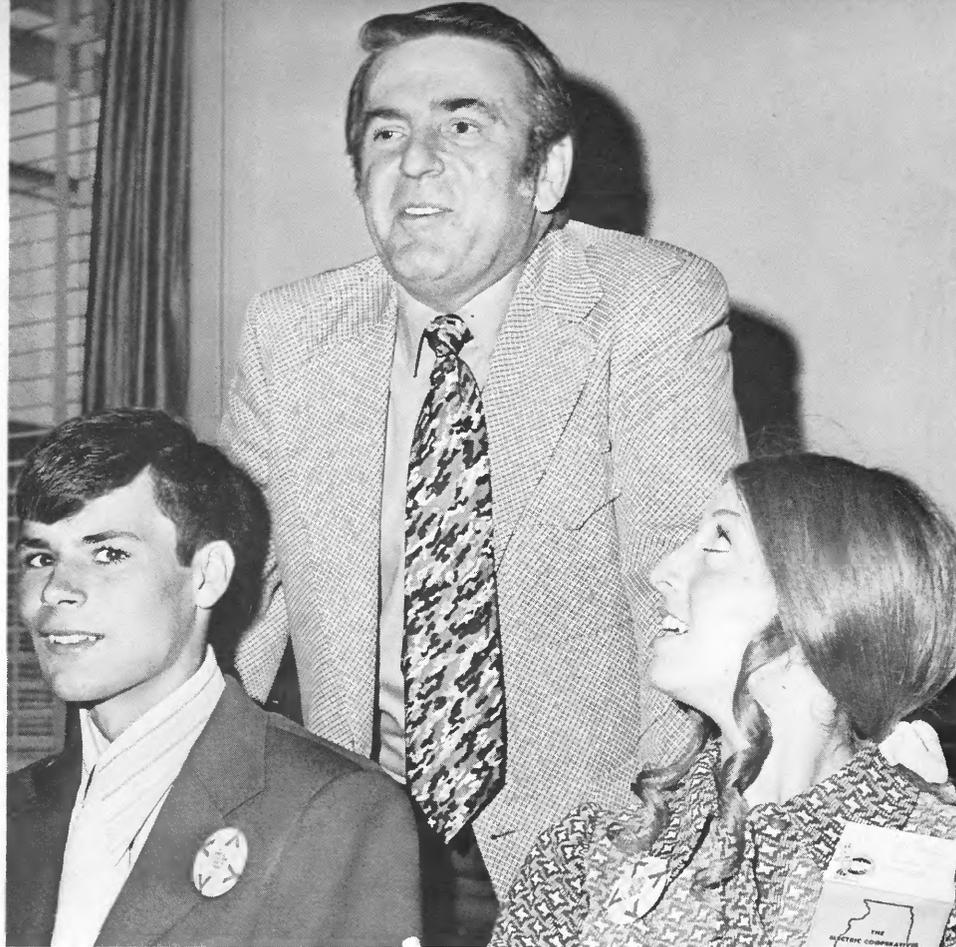


Terry Epplin, Pinckneyville
Egyptian Electric Cooperative
Association, Steeleville



David Ladage, Auburn
Rural Electric Convenience
Cooperative Co., Auburn

Next Year, You Could Be In This Picture



U.S. Rep. Abner J. Mikva, Chicago, (standing) addressed last summer's "Youth to Washington" group. With him are Kelly Reynolds of Witt and Julie Parrish of Monmouth.

Psst—hey you. How would you like to win a week-long, all-expense-paid trip to our nation's capital? Sound too good to be true? Well, it can be yours. All it takes is a little time and effort.

The 1973 "Youth to Washington" tour, sponsored by most of the 27 distribution cooperatives, is right around the corner. Now is the time to start thinking about the cooperative essay contest that qualifies you as a winner.

Last year, 45 outstanding high school students, representing 20 Illinois electric cooperatives, made the trip. They had been selected as essay winners from among hundreds of entrants throughout Illinois.

And if you could have only seen the sparkle in their eyes when they left—and the tears when they returned—you'd have known what a memorable experience it has been.

WHAT MAKES the trip one of the great highlights of their lives?

Maybe these are some of the reasons:

Two trips to the White House, a tour of the U.S. Capitol, Gettysburg, George Washington's home at Mt. Vernon, and the Jefferson Memorial, a visit to the graves of the two Kennedy brothers at Arlington National Cemetery, a talk with your Congressmen and Senators, a night tribute to Illinois' most famous son at the Lincoln Memorial. A walk down the 898 steps of the Washington Monument and living and dining in one of the finest motels in Washington plus much,

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much more.

Not to mention the friends you will meet and the experiences you will share with the more than 1,000 young people from 26 states and 10 foreign countries.

But won't the essay take a lot of time and effort?

Not really. Each participating cooperative makes its own rules. Essays may be as short as a couple of pages, although most run closer to the 1,000 word variety.

The themes vary, but generally the assignment will be to write on what your electric cooperative has meant to your area.

The best source of information is the cooperative. You will find that it has a staff of smart, friendly and helpful people who are interested in you.

They can answer lots of questions. They can provide printed material that will help. They will be happy to see you.

Ask others in your area about your cooperative and how it serves its members (who are really its owners.) Ask how the cooperative and its directors and employees work to develop and improve the area in which the members live.

Go to your English teacher for help. Learn about the cooperative from your parents, neighbors, friends, businessmen, newspaper editors or government officials. Then get to work.

You don't think you have a chance to win? That's what many of the former tour winners once thought.

Christmas Means Sharing

What is the true Christmas spirit? Talk with the Richard Doyle family of Watseka, r.r. 4, and you'll discover that Christmas means, in part, sharing the holiday mood with others.

The Doyles should know. For several years they have extended their Christmas spirit to others through outdoor lighting decorations and the welcoming of visitors.

Thousands of persons each year drive by the Doyles' home to see the striking arrangement of multi-colored, beautifully-displayed Christmas lighting and decorations.

And those visitors who take the time to share in the Doyles' welcome soon find themselves visiting and partaking of homemade cakes, candies and cookies. And there's generally a fresh pot of coffee brewing, too.

"OUR HAPPINESS during the Christmas season," Doyle explained, "comes from the harmony of people who meet at our home as strangers, converse like long-time friends as they share the holiday mood and then depart with good feelings and cheer.

"Last year we had five families from different towns gathered as though they had known each other all their lives. And this is what we think the Christmas spirit is. It's less concentration on commercial aspects and more thought on good, old-fashion fellowship. And each year we see

more and more people turning toward this way of thinking."

Doyle, a general foreman at Watseka's UNARCO firm, which is a world-wide business forms company, has traveled in foreign lands and he and his family have sensed the universality of the Christmas spirit. Not only do they receive Christmas cards from friends throughout America; they also get greetings from acquaintances living in Canada, France, England and Switzerland.

Served by Paxton-based Eastern Illinois Power Cooperative, the Doyles' home is a holiday symbol visible for miles as it beckons passers-by. But it isn't until one approaches closely that the detailed arrangement of the lighting is fully appreciated.

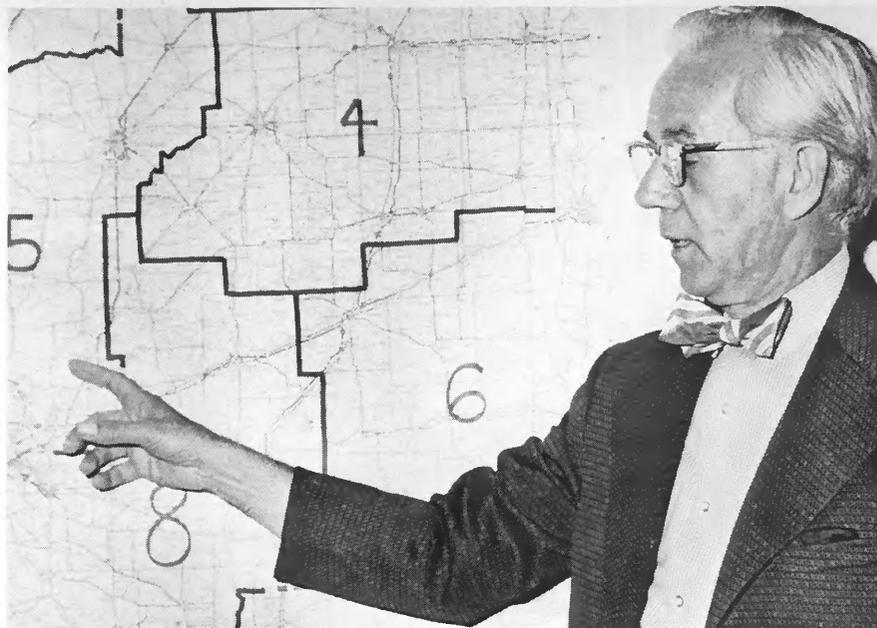
"OUR CHRISTMAS PROJECT is a family hobby that seems to get bigger each year," said Mrs. Doyle, who starts each January planning for that year's display. "Even our son, Gary, who lives and works in a suburb of Chicago, drives down to help us and our other son, when it comes time to put up our year's effort."

Not only have the Doyles found their own meaning of Christmas, which may be your meaning too, but they've also discovered a means of maintaining family ties. And maybe that's what Christmas is all about. Give it a thought and have a Merry Christmas and a Happy New Year!

Mr. and Mrs. Richard A. Doyle and son, J., look at a few of the many Christmas greetings received at their home.



Improving Health Is IHIA's Goal



W. Henderson May discusses health improvement activities going on in one of the many areas that IHIA serves.

Electricity is not the only thing that Illinois rural citizens have obtained through cooperation. A case in point is adequate insurance coverage.

Before 1948, most Illinois rural residents went without health insurance benefits because of high costs. And disability insurance was even more expensive. But if they would organize, they could buy coverage under group rates.

"That's why 24-years ago the Illinois Health Improvement Association (IHIA) was created," W. Henderson May, IHIA executive director, said in a recent interview.

"The idea for forming IHIA was similar to the idea for electric cooperatives," he added. "Where you organized to provide electricity, we did it for insurance coverage."

TODAY IHIA represents 115,000 members from 95 county Health Improvement Associations (HIAs). At least 80 percent belong to electric cooperatives, May estimated.

Besides using the organization to lower insurance costs through group purchases, members have formed an army of volunteers to work in a number of health improvement activities.

Blood banks, donation of equipment to hospitals, health and dental care for underprivileged children, working with state and local public health officials, health education forums, sponsoring safety programs, Kidney Foundation work and work-

ing with 4-H clubs are just a few of IHIA's projects.

"Our goal is to find ways to improve the health of our members and for that matter, anyone in rural Illinois," May said.

"A good example is our work in no-doctor towns," he explained. "Our plan was to supply a clinic to these areas staffed by doctors from nearby communities.

"We have also published some information on how to improve local ambulance services. You can imagine how important this is in isolated areas of our state."

IHIA is also striving to supply Illinois with more qualified health personnel.

In 1963, the Health Improvement Foundation was established by IHIA to provide loans and scholarships to students in health sciences.

"Each year the foundation provides seven \$500 scholarships to these students," May said. "We try to award them to rural kids, but this isn't always the case. We do ask that the students try to spend one year in Illinois after graduation."

Likewise, the county HIAs provide deserving students with scholarships. And some organizations award a \$50 savings bond to 4-H members for their activities in health projects.

"We are very interested in getting more people into the health services profession," May said.

MAY EXPLAINED the need for

health service personnel is not only in the medical field. "There is a desperate need for administrative, management and hospital planning people too."

How do you become a member of IHIA?

"Any civic minded person can become a member of IHIA by paying \$3 dues," May said. "They can then join us in our volunteer programs."

To be eligible for the insurance coverage, the qualifications are a little more confining. You must be a resident of a rural area or community of less than 3,000 persons, or self-employed and under 60 years of age on the date of application.

IF YOU JOIN as a volunteer, prepare to be committed.

"We are urging our members to sign a uniform donor card issued by Illinois Kidney Foundation," May said. "The card is a legal document in all states. This allows you to donate any of your vital organs after death for transplantation purposes."

How successful IHIA projects will be depends on volunteers. May calls them bright, diligent and progressive people. They are the ones, he says, who make the projects work.

"And you know, I can think of several volunteers who are active in county HIA health improvement projects and also electric cooperative members," he said.

It is not surprising—knowing the type of people electric cooperatives have as members.



Steam pours forth from 3,500-foot deep well as Baca VI drills for geothermal energy in volcano bed of Jemez Mountains in New Mexico.

Earth's Interior

May Provide

Future Power

By Graham W. Howe

Rural Electric News Service
Washington, D.C.

Where will the electric power needed by America's farms and factories, rural and urban communities come from in the decades ahead?

Hot rocks and water beneath the earth's surface may hold a partial answer.

Advocates of geothermal energy have long urged tapping underground sources of steam such as ones that produce the geysers in national parks and at some other locations. The U.S. Geological Survey lists more than 1,100 thermal springs, mostly in Western states, and a few localities have used geothermal steam for heating homes, schools and other buildings.

But its use to date for producing electrical power has been limited.

ILLINOIS RURAL ELECTRIC NEWS



Only one geothermal field—the Big Geysers in California—is now producing significant amounts of power.

GEOTHERMAL explorations, however, are becoming more numerous and scientists are devoting more attention to improved means of converting the potential sources into usable power. Spreading explorations include those underway in northern Mexico and the old volcanic mountains of New Mexico.

One such location is about 25 miles northwest of Los Alamos, N. Mex., in the Valle Grande, where exploratory drilling began July 1 at Baca VI. Geothermal possibilities of the area were indicated by

previous exploration and drilling by the owners of the 100,000 acres.

Served by Jamex Mountains Electric Co-op of Espanola, N. Mex., Baca VI is operated by Union Oil Company of California in agreement with Dunigan Enterprises, Inc., and Baca Land and Cattle Company, both of Abilene, Texas.

In northern California, the Geysers field supplies steam to generate 190,000 kilowatts of power. An additional 110,000 kw are scheduled to be added each year for the next several years.

GEOTHERMAL resources consist essentially of heat generated from the earth's core and recoverable in some medium such as hot ground water or existing as steam. The heat energy moves up in magma flows first conducted through solid rock and later through fissures of water-containing porous rock layers until it reaches surface-close levels where favorable geological characteristics are found. This heat transforms into super hot pressurized underground waters.

By means of specially drilled wells these underground waters, with a large amount of stored thermal energy, may be brought up to the surface and turned into steam to generate electrical power.

Testimony at a recent House Task Force Committee hearing in Washington revealed that currently 0.1% of the world's total generation is geothermal and amounts to about 1,000 megawatts (each megawatt being 1-million watts), of which approximately 200 mw are generated in the United States. It was projected that by the mid-1980's, geothermal sources would be producing 4% of the world's power, reaching 20,000 mw.

It also was testified that there are about 100,000 square miles of known geothermal reserves in the United States, of which 50,000 square miles are estimated to be about a mile thick. Contained in that reserve is enough energy to generate the total electrical supply for the U.S. for 150 years at its present rate of consumption.

BESIDES ECONOMICAL power production and useful by-products,

potential advances of geothermal energy include negligible harmful impact to the atmosphere and no water pollution. It also is seen by the Bureau of Reclamation, which in August completed drilling its first deep geothermal well to tap the hot brines underlying Imperial Valley in southern California, as a possible source for high quality desalted water. (The Department of Interior's Office of Saline Water plans to install a portable pilot plant at the well to conduct desalination research.)

However, use of geothermal energy also has some adverse effects. These include the diversion of land from farming and other uses, the possibility of saline water spills, and land subsidence. And power plants using the natural steam may have a problem with accompanying chemicals corroding pipes and valves.

IN THE OFFING may be a means of minimizing this last problem through the patting of another geothermal source. The few geothermal plants presently operating are limited to sites above underground reservoirs of water heated by molten rocks. But a group of scientists at the Atomic Energy Commission's Los Alamos scientific laboratory recently came up with what they term an improved method of exploiting geothermal energy for the production of electric power that would require no new technology.

Their idea is to drill into hot but dry underground regions and pump water into the earth where it would be circulated and heated, following which the boiling water would rise to the surface and create steam to power the generators.

The scientists say their new technique might be used wherever there is hot but dry rock within 25,000 feet of the surface. Although underground hot water reservoirs in this country are primarily limited to the Far West, hot, dry rock is more prevalent. The scientists believe their method could have practical application in parts of the East, particularly in portions of Pennsylvania and upstate New York.

What's New?



Double Baking Power

A double built-in electric wall oven complements Corning's "The Counter That Cooks" built-in cooktop. The top oven is a pyrolytic self-cleaning oven with full black-glass

doors and a variety of standard cooking features. The lower oven is a baking unit, allowing the home-maker to bake or broil in one while baking at a lower temperature in the other.



Self-Buttering Popper

West Bend introduces the Butter-matic—a new 4 quart self buttering automatic corn popper. The unit features a cup set into the clear, dome cover into which butter is

placed. As the butter melts, it drips down into the popping corn. The natural popping action, according to West Bend, mixes the butter for hot, pre-buttered corn every time.

1972 RD Act Will Benefit Rural Illinois

The Rural Development Act of 1972, recently signed by President Nixon, will provide new opportunities to rural Illinois residents, according to Gordon L. Ropp, director of the Illinois Department of Agriculture.

Ropp said the bill will bring much needed revenues into rural communities, providing opportunities for employment, better living conditions and credit assistance for businesses. He outlined the key provisions of the bill:

1. Broadens the definition of "rural areas" (10,000 for community facility and rural housing financial assistance and 50,000 for rural enterprise and business financial assistance.)

2. Increases funding authorization for the planning and construction of rural community water and waste disposal systems (to \$30 million and \$300 million respectively.)

3. Requires that preference be given on loans or grants to very small communities (5,500 or less) where the present system has deteriorated.

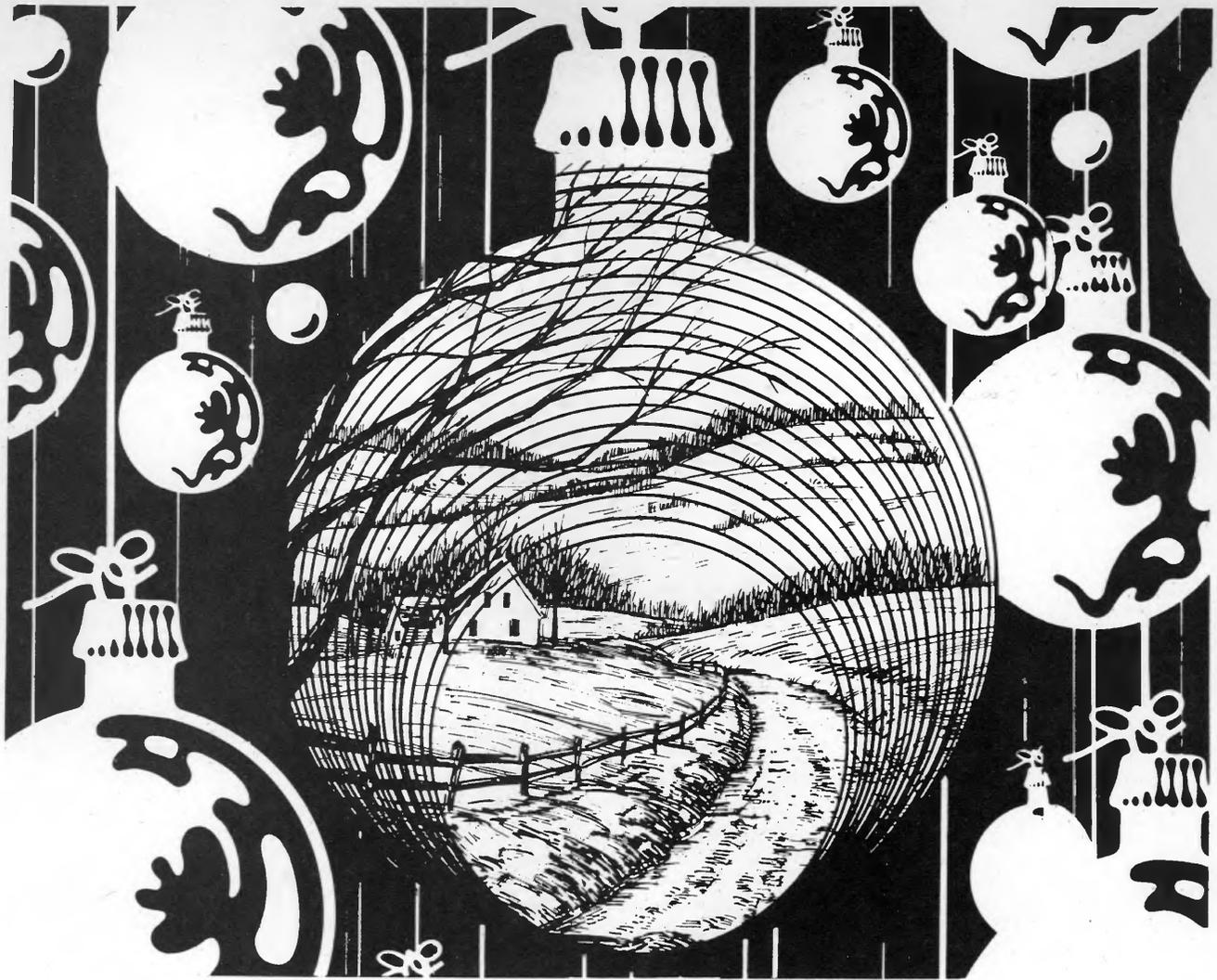
4. Provides for \$10 million authorization in grants for the preparation of comprehensive rural development plans.

5. Requires that purposes for which loans and grants are made to public bodies shall not be inconsistent with state, substate and local government comprehensive development plans.

6. Authorizes loans and grants for the acquisition, expansion or operation of business and industrial enterprises (large or small—private or public—profit or non-profit), or to facilitate the development of such enterprises (industrial parks, pollution control, etc.).

7. Establishes a new Rural Development Credit Insurance Fund to make and insure rural development type loans. No obligation ceiling is established for this particular fund.

8. The Farmers Home Administration operating loan ceiling is increased from \$35,000 to \$50,000 and these loans may be insured.



A warm colorful glow covers the countryside this holiday season. The twinkling brightness of lighted Christmas decorations is one of the many "presents" the Illinois Electric Cooperatives supply for the year-round convenience and enjoyment of a half a million people. To them, and all Illinoisans, we wish a joyous holiday season!



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GOOD FOR ALL ILLINOIS



Smile Awhile

REALISTIC 'TOUCH'

It was graduation day, and mom was trying to take a picture of her son in a cap and gown, posed with his father.

"Let's try to make this look natural," she said. "Junior, put your arm around your Dad's shoulder."

The father answered, "If you want it to look natural why not have him put his hand in my pocket?"

FORGETFUL THIEF

There's at least one man in our town who not only has the ability to take what comes, but he keeps his sense of humor, too. When his lawnmower was stolen recently he put the following ad in the local paper:

"Will the person or persons who stole my brand new lawnmower from my front yard Tuesday night please come back and pick up the 90-day guarantee."

DON'T SPOIL HER

Two young boys were discussing the girl problem. Said the first: I've walked to school with her three times and carried her books. I bought her an ice cream soda twice. Now, do you think I ought to kiss her?

Replied his friend: Naw, you don't need to. You've done enough for that gal already.



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OF COURSE, STUPID

A stranger walked up to a farmer and showed him his card. "I'm a government inspector," he said, "and I'm entitled to inspect your farm."

A few minutes later the farmer heard screams from his pasture, where the inspector was being chased by a bull. Leaning over the gate, the farmer yelled at the top of his voice, "Show him your card, mister. Show him your card."

GO, MAN, GO!

A man was on his way to visit friends, and the path led through the swamp.

"Say," he asked a man along the way, "is it true that an alligator won't hurt you if you carry a torch?"

The man answered, "Well, it all depends on how fast you carry it."

HAZARDS OF THE GAME

The doctor was examining a husky male patient. The man's shins were bruised, and the doctor asked him, "which do you play, hockey or soccer?"

The man replied, "Neither Doc, all I play is bridge."

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Co-ops Invest \$123 Million In CFC Plan

With the issuance of \$40,357,859 of Capital Term Certificates (CTC's) on October 1, 1972, rural electric systems have invested a total of \$123,396,627 in the National Rural Utilities Cooperative Finance Corporation (CFC), a non-profit, cooperative financing institution.

CFC was created by its member rural electric systems to provide capital to supplement loan funds available through the Rural Electrification Administration (REA) loan program.

CTC's, which earn interest at the rate of 3 percent per annum, have a 50 year maturity and represent the member systems' investments in their supplemental financing institution.

In establishing CFC, provision was made for annual investments by the member systems in CTC's over a fifteen-year period. The subscription period was divided into two segments. The first, covering the initial three years, provided for annual investment under a formula based on each member's utility plant, operating revenues (after deducting power costs) and reserves. This initial segment ended October 1, 1972.

The second segment covers annual subscriptions for the fourth through the fifteenth year, during which the member systems will subscribe to CTC's under a formula based on operating revenues after deducting power costs.

ALL CTC investments are due and payable on October 1, each year. Payments received more than 30 days in advance of that date earn interest at the rate of 6 percent per annum until the payments become due. To date, CFC has paid a cumulative total of \$5,308,526 interest to its member rural electric systems.

Currently, CFC has a membership of 850, including 783 electric distribution systems, 33 power supply systems, and 34 statewide, regional, and national associations.

New! From Mutual of Omaha!

Three way protection

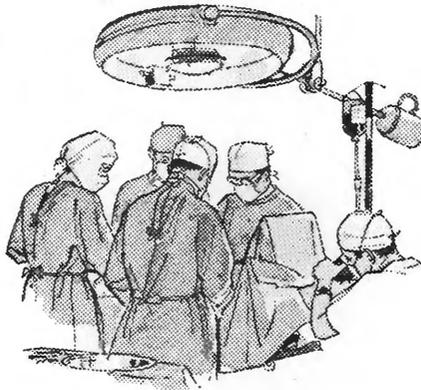
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PINEAPPLE BEET SALAD IS RIGHT FOR MEAT



HOLIDAY SNOW WHITE SQUARES

APPLES HIDE IN HOMEMADE SURPRISES OF HAPPY APPLE CAKE, APPLE-DATE COOKIES, FRUITCAKE, PUDDING AND EGGNOG WASSIL



Holiday Foods... for All to Enjoy

■ Whether your decor features wonderful wicker and cheery chintz, or creative crates and bumptious boxes from a recent move, traditional holiday home baking seems to fit right in. Homemade treats welcome apartment callers, make thoughtful gifts for neighbors in the ranch-style house next door, or brighten any holiday table. And, they fill your own home with that wonderful fragrance of baking which is such a delightful part of this happy, nostalgic, gracious season. For giving or serving, stir up a holiday surprise.

EGGNOG WASSAIL BOWL

3 quarts dairy eggnog
1½ quarts cider
½ teaspoon nutmeg
½ teaspoon cinnamon
4 whole cloves
1 teaspoon grated lemon peel

In a heavy saucepot combine eggnog, cider, nutmeg, cinnamon, cloves and lemon peel; heat slowly, stirring occasionally.

Note: Eggnog Wassail may also be chilled and served very cold. If desired, more cider may be added for a thinner consistency.

STEAMED APPLE PUDDING

½ cup (1 stick) butter
1 cup sugar
2 eggs
2¾ cups sifted regular all-purpose flour
1 tablespoon baking powder
1 teaspoon cinnamon
1 teaspoon nutmeg
¼ teaspoon ground cloves
¼ teaspoon salt
½ cup milk
1 or 2 apples, pared, cored and chopped to measure 1½ cups
½ cup chopped pecans

In a large mixing bowl cream butter; gradually add sugar and beat until light and fluffy. Beat in eggs, one at a time. Sift together flour, baking powder, cinnamon, nutmeg, cloves and salt; add to creamed mixture alternately with milk. Stir in apples and nuts. Turn into well-buttered 10-cup mold. If mold has its own lid, butter inside of lid and cover mold; or use foil to cover, pressing tightly around edges and securing with rubber band or string. Place mold on a rack in a pan with a tight-fitting cover. Pour enough water into pan to come half-way up on mold. Bring water to boil; cover and reduce heat to simmer. Steam 3 hours or until done. Let stand 10 minutes; unmold and serve with double recipe of Hot Buttered Rum Sauce. Pudding may be refrigerated several days or cooled, wrapped and frozen for several months. To heat: Thaw in refrigerator; wrap in foil and reheat at 325° about 45 minutes. 12-16 servings.

SNOW WHITE SQUARES

1 tablespoon unflavored gelatin
¼ cup cold water
1 cup boiling water
¾ cup sugar
¼ teaspoon salt
3 egg whites
1 teaspoon vanilla extract
1 can (3½-oz.) flaked coconut

Soften gelatin in cold water about five minutes; dissolve in boiling water; add sugar and salt; cool. Add unbeaten egg whites and vanilla, and beat until mixture is light and creamy. Pour in 9x9x2" square pan and smooth surface with spatula. Chill until firm. Cut into one inch squares and roll in coconut. Pile in sherbet glasses and store in refrigerator until serving time. Serve with Lemon-Butter Sauce. Makes 8 servings.

LEMON-BUTTER SAUCE

2 egg yolks
⅓ cup sugar
⅓ cup softened butter
1 tablespoon grated lemon rind
2 tablespoons lemon juice
½ cup whipping cream, whipped

Beat egg yolks until light; gradually beat in sugar, add butter, lemon rind and juice. Fold in whipped cream. Chill and serve.

APPLE-DATE COOKIES

DOUGH:
¾ cup (1½ sticks) butter
1 cup sugar
2 eggs
3½ cups all-purpose flour
1 tablespoon baking powder
1 teaspoon salt
½ cup milk
½ teaspoon vanilla
FILLING:
1 cup sugar
¼ cup regular all-purpose flour
¼ teaspoon salt
1 cup water
2 or 3 Washington Golden Delicious apples, pared, cored, and chopped to measure 2½ cups
1 cup chopped dates

To prepare Dough: In a large mixing bowl cream butter; gradually add sugar and beat until light and fluffy. Beat in eggs, one at a time. Sift together flour, baking powder and salt; add alternately with milk and vanilla, mixing well after each addition. Chill for ease in handling. To prepare Filling: Combine sugar, flour and salt; gradually stir in water and mix well. Stir in apples and dates. Cook over medium heat, stirring frequently, until consistency of marmalade. Remove from heat; chill thoroughly. On lightly floured surface roll out dough to ⅛-inch thickness. Cut out 2½-inch rounds. Leave one half whole; in second half cut out center with a small round or star-shaped cutter. Place whole rounds on greased baking sheet; top each with rounded teaspoon of Filling. Cover with cut-out round; press together with tines of fork or fingers. Bake at 400 degrees 10-12 minutes. Remove to wire rack to cool. Store cookies in lightly covered container.

APPLE FRUITCAKE

½ cup (1 stick) butter
1 cup firmly packed light brown sugar
1 egg
1 teaspoon vanilla
1¾ cups regular all-purpose flour
1 teaspoon baking powder
½ teaspoon baking soda
½ teaspoon cinnamon
½ teaspoon nutmeg
1 teaspoon salt
¼ cup milk
1 or 2 Washington Golden Delicious apples, pared, cored and finely chopped to measure 1½ cups
1 cup raisins or chopped dates
1 cup mixed candied fruit
1 cup chopped nuts

Line 9x5x3 loaf pan with waxed paper. In a mixing bowl cream butter; gradually add sugar and beat until light and fluffy. Beat in egg and vanilla. Sift together flour, baking powder, soda, cinnamon, nutmeg and salt; add to creamed mixture alternately with milk beginning and ending with dry ingredients. Fold in apples, raisins, mixed fruit and nuts. Spread evenly in pan. Bake at 275 degrees 2½ to 3 hours. Cool in pan. Remove paper.

PEPPERMINT CHOCOLATE COOKIES

COOKIE DOUGH:
2 cups regular flour
½ cup cocoa
¼ cup sugar
1 teaspoon salt
½ teaspoon baking powder
¾ cup (1½ sticks) butter
2 egg yolks, slightly beaten
½ cup milk
1 teaspoon vanilla
PEPPERMINT MERINGUE:
2 egg whites
¼ teaspoon cream of tartar
¼ cup sugar
½ teaspoon vanilla
¼ teaspoon salt
1 cup crushed peppermint stick candy
Red food color

Sift together flour, cocoa, sugar, salt and baking powder. Cut in butter until mixture resembles cornmeal. Combine egg yolks, milk and vanilla and add to flour mixture. Stir only enough to form a soft dough. Shape cookie dough into balls 1-inch in diameter and place on baking sheet; flatten with bottom of glass dipped in granulated sugar. To make Meringue: Beat egg whites until frothy. Add cream of tartar and beat until soft peaks form. Add sugar, 1 tablespoon at a time, and continue beating until very stiff peaks form. Add vanilla and salt. Fold in candy and food color. Top each cookie with a teaspoon of meringue. Bake at 325 degrees 15-18 minutes. Yield: 3½ dozen.

CHEESECAKE COOKIES

CRUST:
¼ cup (½ stick) butter
⅓ cup firmly packed light brown sugar
1 cup all-purpose flour
½ cup chopped pecans
¼ cup currant jelly
FILLING:
1 package (8-oz.) cream cheese
¼ cup sugar
1 egg
2 tablespoons milk
2 tablespoons lemon juice
½ teaspoon vanilla

In a mixing bowl cream butter; add brown sugar and flour. Blend until mixture resembles cornmeal. Stir in pecans. Reserve 1 cup of mixture for topping. Press remainder onto bottom of 8-inch square baking pan. Bake at 350 degrees 15 minutes. Cool; spread jelly over crust. To prepare Filling: In a mixing bowl beat together cream cheese and sugar. Beat in egg and milk. Add lemon juice and vanilla. Turn into pan; sprinkle with reserved crumb mixture. Bake 30 minutes. Cool on wire rack; cut into bars or squares.

COFFEE EGGNOG

4 cups dairy eggnog
2 tablespoons instant coffee powder
1 teaspoon vanilla
1 cup whipping cream, whipped
nutmeg

In a mixing bowl beat together eggnog, coffee powder and vanilla. Chill. Fold all but 4 tablespoons of whipped cream into coffee mixture. Pour eggnog into cups. Top with remaining whipped cream. Sprinkle with nutmeg. Serve immediately.

PINEAPPLE BEET BUFFET SALAD

1 (1-lb., 4-oz.) can crushed pineapple
1 (3-oz.) pkg. strawberry gelatin
1 (8-oz.) can diced beets
3 tablespoons vinegar
1 teaspoon prepared horseradish
½ cup chopped celery

Heat undrained pineapple and dissolve gelatin in it. Drain beets, reserving liquid. Stir ⅓ cup reserved beet liquid, vinegar and horseradish into gelatin mixture. Cool until slightly thickened. Fold in beets and celery. Turn into individual molds. Chill until firm. Unmold. Makes 6 individual molds.

FRESH APPLE CAKE WITH HOT BUTTERED RUM SAUCE

½ cup (1 stick) butter
2 cups sugar
2 eggs
2 cups sifted regular all-purpose flour
1 teaspoon baking powder
¾ teaspoon baking soda
½ teaspoon salt
½ teaspoon nutmeg
½ teaspoon cinnamon
3 apples, pared, cored and chopped to measure 3 cups
½ cup chopped nuts

In a mixing bowl cream butter; gradually add sugar and beat until light and fluffy. Beat in eggs, one at a time. Sift together flour, baking powder, soda, salt, nutmeg and cinnamon; gradually add to egg mixture. Stir in apples and nuts. Turn into 13x9x3" buttered pan. Bake at 325 degrees 45-50 minutes. Serve with Hot Buttered Rum Sauce to 12.

HOT BUTTERED RUM SAUCE

1 cup sugar
½ cup (1 stick) butter
½ cup light cream or half and half
1 teaspoon rum extract

In a saucepan combine sugar, butter and cream; heat over low heat, stirring occasionally, until hot. Stir in extract.

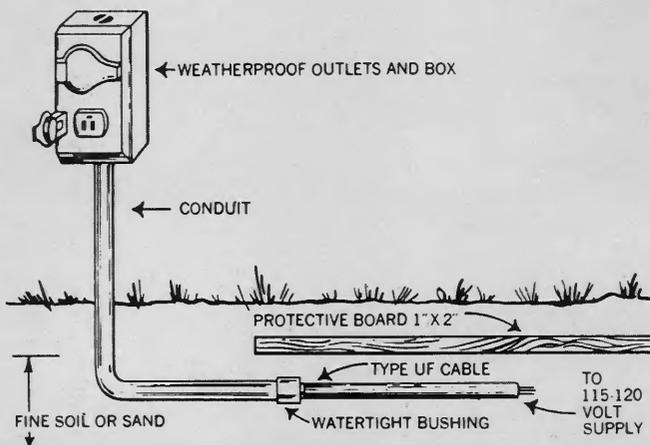
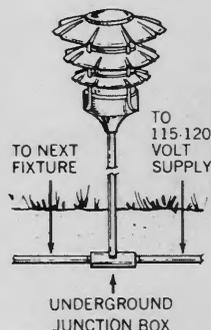
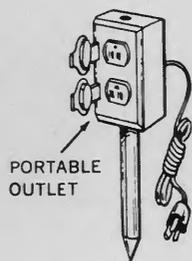
THE LIGHTS OF CHRISTMAS

★ Decorative Christmas lighting adds a special glow to our brightest holiday season of the year. Outdoor lighting provides pleasure for everyone—for neighbors, for the family which works together in a creative effort, for the community. Somehow, nothing expresses the sentiments and symbolism of the season as effectively as the gleam and glitter of light that relieves the bleakness of a long winter night. The challenge confronting the designer is how to achieve something different with the same basic themes every year.

First, remember the *spectator's viewpoint*. Your next consideration is *theme*. The next point is *dramatize your theme*. Always accentuate the focal point with stronger light. Finally, *unify all elements*.

Proper wiring is essential for complete enjoyment and safety of lighting. Underground wiring to switch-controlled permanent fixture location and convenience outlets is a safe and convenient system. It also allows for the use of electrical appliances and garden power tools, too. It allows for some far-ranging experiments you'll want to try before making final decisions. Here are some facts about both systems:

TEMPORARY WIRING—Use outdoor-type rubber extension cords of at least No. 16 wire size. They come in lengths of 25, 50 and 100 feet with sockets and plugs molded in weatherproof rubber. Connect the cord into the nearest outlet in or on the house or garage. Then you'll need at least one outdoor-type portable double-convenience outlet fixture (see sketch). Extension cords and outlet fixtures are available in 2-conductor and 3-



conductor grounded types; 3-conductor grounded devices are recommended. Some garden fixtures have a built-in outlet into which another fixture can be plugged. Since you are using regular house circuits, be sure you don't exceed 1600 watts on a 15-ampere circuit, or 2000 watts on a 20-ampere circuit.

PERMANENT WIRING—This is really a job for the experts. Your electrician will know how to install permanent wiring. But if you've had experience along these lines, and if the local codes allow it, you can do the job.

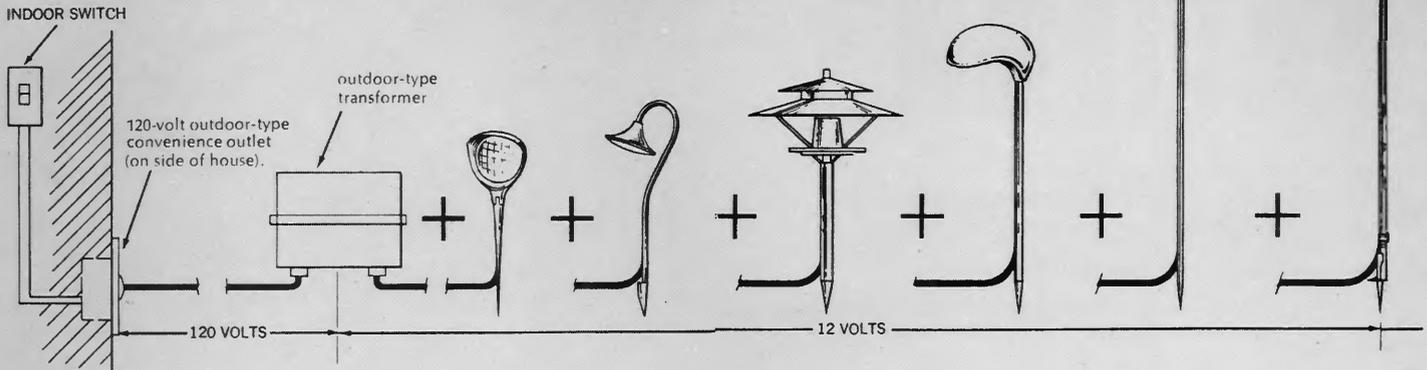
Once your plan for lighting is settled, Neoprene plastic (type UF) cable is run in trenches out to the areas you're going to light. Most electrical codes require metal conduit or sheath only where the cable emerges from the ground. But check. The cable is connected to weather-proof outdoor outlets or to underground junction boxes on which fixtures can be permanently installed (see sketch). Convenience outlet boxes can be located on the house, a fence, post or tree, or can be set in other desired locations for the use of portable equipment. Locate equipment so it cannot cause falls or be damaged by mowing or digging. Separate circuits for outdoor lighting should be provided in the house panelboard and switch controlled from the house. Always make a sketch of the wiring layout for ready reference, for repairs or when additional fixtures may be installed. You can install an electric-eye or timer to control selected lighting units so your grounds will be lighted at dusk whether you are home or not.

SEVEN HINTS FOR SAFETY'S SAKE—

1. Work only when the ground is dry.
2. Have a switch to control the outdoor circuits and turn OFF all current while you're working.
3. Use only outdoor-type equipment with waterproof cords, plugs, sockets and connections.
4. Tape temporary connections with electrical tape. Elevate them to keep connections out of puddles.
5. Some holders for bulbs come equipped with gaskets—round rubber rings. Use them. They create a seal around the neck of bulb to keep moisture out of the socket.
6. For fixtures and bulbs placed in water use a cord with molded rubber socket. Such a socket tightly grips the neck of the bulb, thus preventing water from seeping into the socket.
7. Water and 120 volts of electricity don't mix. But it is safe if you make all connections and put the bulbs in the water first, THEN turn on the current.

LOW VOLTAGE LANDSCAPE LIGHTING—Outdoor wiring to be used on standard household current of 115-120 volts is described above. This is the range of voltage commonly used in houses, and the system with which we are most familiar. There is also a system known as low-voltage for which we now have bulbs, fixtures and wiring. It operates on 12 volts which is the same voltage used to safely operate a child's electric train. The "heart" of a 12-volt outdoor lighting system is the voltage reducing transformer which reduces the 115-120-volt supply down to 12 volts. Transformers are made weatherproof for outdoor use and are easy to connect to an existing outlet as

A transformer of the outdoor type which plugs into a 115-120 volt outdoor convenience outlet on the house or other available location (or installed permanently), reduces the household voltage to 12 volts. From the transformer there is a length of 12-volt outdoor cable that can be placed on the ground, underground, or in water. A variety of 12-volt fixtures can then be connected to the 12-volt cable.



illustrated. Fixtures of various designs can be easily attached to the 12-volt cable which extends from the transformer, and then moved in perfect safety from one location on the resealing cable to another. The methods of connecting fixtures to the self-sealing cable differ with manufacturers. Some low-voltage systems come equipped with timers for turning lights on and off.

FIXTURE TYPES—Fixtures for a 12-volt system, as with a 120-volt system, are available in two types: (1) portable fixtures which spear into the ground and attach to a cable placed on the ground and, (2) fixtures supplied with a conduit mount for attachment to a terminal box and underground cable. What do you want to light and what effect do you desire?

- up-lighting small plants and trees
- down-lighting steps, paths and foliage
- dramatizing a reflecting pool or fountain
- highlighting a statue or flower bed
- accent lighting of wall, fence or patio
- creating dramatic shadow patterns

There are 12-volt fixtures designed to do all of this. Not any one fixture, of course. It may take several fixtures, for they are designed to produce different lighting effects. Always remember, the prime objective is to SEE what is lighted and not the source of the light.

LIGHT BULBS FOR 12-VOLT SYSTEMS—The size, shape and bases on 12-volt bulbs differ from the usual 12-volt household bulbs which have screw-type bases. They differ also in that 12-volt bulbs are known by a number rather than by wattage. Some 12-volt bulbs will be familiar to car owners as they are of the type used in automobiles and are available at most service stations. As a general statement, bulbs used in today's 12-volt garden lighting fixtures range in "watts consumer" from about 7 to 35 watts. They usually have a shorter rated life than 120-volt light bulbs. When using low-voltage yard lighting, follow the directions and bulb data supplied by the manufacturers.

WED BOTH SYSTEMS—Low-voltage outdoor lighting systems and equipment offer the lighting designer features not always found in standard 115-120-volt designs. Some of the 12-volt equipment features and advantages are:

- low-voltage is a safety factor

- ease of relocating fixtures on a re-sealing cable
- most 12-volt bulbs cost less to replace and operate
- small scale fixtures useful in restricted spaces
- ease of home owner installation

For the myriad effects desired in the design of outdoor lighting there needs to be a compatible partnership of both 120-volt and 12-volt lighting systems and fixtures. Large, tall trees, expansive shrubbery, and other specialized effects will require the power and punch delivered by standard 120-volt fixtures and light sources. Therefore, in planning outdoor lighting, wed these two systems to combine the advantages and talents of each. Thus, you can produce a wonderland at Christmas and charm for all the yard for all seasons—everywhere.

After you've planned your display on paper, acquired the necessary materials, placed and illuminated them, have a "sidewalk's eye" view to see if the desired effect has been achieved. If not, chances are there's a lack of unity in your setting.

Usually, diffused light over the entire area will solve the problem. Unity also can be obtained with strings of lamps to form linear paths of light. Perhaps a combination of the two.

Sometimes, there are features of a home which should be subdued. Perhaps a multi-windowed wall. Arrange your spotlights so they don't illuminate that area.

And watch out for glare, sharp unwanted contrasts and ominous shadows. Once eliminated, your pleasant picture is complete.

Artistic outdoor lighting is the newest way to make every holiday guest—Santa included—feel more welcome than ever.

Kits with 100-watt transformers with six lamps complete with mounting brackets and color lenses are available. They give a chance to experiment with a variety of lighting that will make a good display. When you advance to more specialized lighting, other kinds of lamps and fixtures can be purchased separately and installed on the same cable with the kit's lamps. Keep in mind that total watts cannot exceed the transformer's capacity; this means leaving off enough of the kit lamps to make room for any lamps you add. You may replace an 18-watt with two nine-watt bulbs, for example.

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- No. 4888 is cut in sizes 10-1/2, 12-1/2, 14-1/2, 16-1/2, 18-1/2, 20-1/2. Size 14-1/2 (bust 37) pantsuit 2-5/8 yds. 54-inch.
- No. 9133 is cut in sizes, 7, 9, 11, 13, 15. Size 11 (bust 33-1/2) dress 1-7/8 yards 54-inch; smock 1-3/8.
- No. 4967 is cut in sizes 8, 10, 12, 14, 16, 18. Size 12 (bust 34) dress 2-1/2 yards 45-inch.
- No. 9371 is cut in sizes 10-1/2, 12-1/2, 14-1/2, 16-1/2, 18-1/2. Size 14-1/2 (bust 37) takes 2 yards 45-inch.
- No. 4633 is cut in Teen sizes 10, 12, 14, 16. Size 12 (bust 32) jumper 2 yards 45-inch; shirt 1-3/4 yards.
- No. 4921 is cut in sizes 8, 10, 12, 14, 16, 18. Yardages in pattern.
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- No. 4821 is cut in sizes 8, 10, 12, 14, 16, 18. Size 12 (bust 34) shorter length 2-3/4 yds. 54-inch fabric.
- No. 4810 is cut in sizes 34, 36, 38, 40, 42, 44, 46, 48. Size 36 (bust 40) takes 3 yards 45-inch fabric.
- No. 4625 is cut in sizes 10-1/2, 12-1/2, 14-1/2, 16-1/2, 18-1/2. Size 14-1/2 (bust 37) takes 2-1/2 yards 45-inch.
- No. 4545 is cut in sizes 10-1/2, 12-1/2, 14-1/2, 16-1/2, 18-1/2, 20-1/2. Size 14-1/2 (bust 37) takes 2 yds. 54-in. fabric.
- No. 4843 is cut in sizes 8, 10, 12, 14, 16, 18. Size 12 (bust 34) takes 2 yards 54-inch fabric.

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