

SEPTEMBER
1962

Rural Lines

RURAL ELECTRIFICATION ADMINISTRATION • U. S. DEPARTMENT OF AGRICULTURE

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Rural America's Greatest Asset: Its Young People

(See articles on pages 6, 9, 11, 17)



A Message from the ADMINISTRATOR

(Extract from a talk given at Asheville, N. C., before the annual joint regional meeting of regions 1, 2, and 3, National Telephone Cooperative Association.)

In general, these are the principles on which we are developing REA policy for the telephone program.

1. We consider local ownership and control to be an important factor in assuring continued interest of each borrower in providing good telephone service to the community it serves.

2. Where local ownership and control are lacking, where financial motivation is more dominant, we have moved to require the borrower to provide greater equities in order to discourage speculative operations and to prevent the creation of the inevitable troublesome situations which arise when people are persuaded to invest in companies with such low equities that we must require them to delay payment of dividends. Also, over and above the minimum net worth required for the payment of dividends, REA now limits the payment of dividends to not more than 70 percent of accumulated net earnings annually until the borrower's adjusted net worth is at least 40 percent of its adjusted assets.

3. We want to develop logical and rational systems that are conducive to the best technical standards and efficient management. Where a borrower wants to expand its system by acquiring existing facilities with REA financing, REA may decline to approve a loan if in our opinion the facilities to be acquired fail to constitute a logical extension of the borrower's existing system because of their remote location; if the acquisition price is too high; or if alternate arrangements would provide better assurance of loan security or of attaining the objectives of the REA telephone loan program.

4. Finally, to protect the program from possible radical changes in management after REA loans are made, we have adopted a mortgage provision which permits REA to require a borrower to increase its adjusted net worth, within one year, to a maximum of 20 percent of adjusted assets whenever a change in ownership interest in the borrower occurs which might adversely affect its security.

Rural Lines

Editor: Samuel Levenson


Administrator

Contributors to this issue: Lucile M. Holmes, Bernard Krug



SEPA EXPERIMENT IN TEAMWORK

Suburban Electric Power Associations (SEPA) is an organization of four rural electric cooperatives which aims to promote industry, housing developments, and recreation in the Minnesota counties they serve—and at the same time protect the area from invasion.

These four cooperatives came into existence about 25 years ago when the commercial power company serving Minneapolis and St. Paul refused to extend its lines to several surrounding counties because it did not seem economically feasible. The cooperatives, formed under provisions of the then-new Rural Electrification Act, are Anoka Electric Cooperative, Anoka; Dakota County Electric Cooperative, Farmington; Minnesota Valley Electric Cooperative, Jordan; and Wright-Hennepin Cooperative Electric Association, Maple Lake.

What happened thereafter is known to all. Thousands of new homes sprang up on thousands of acres where, only a few years before, farm crops were growing and cattle were grazing. The new families made it necessary to establish schools, churches, shopping centers and numerous other service facilities. Small industries moved in. In 20 years the population of Hennepin, Ramsey and Anoka counties

quadrupled. Dakota and Washington counties doubled in population, and Scott and Carver counties are following the same pattern.

The result now is that, of the 30,000 consumers served by the four REA borrowers, fewer than half are farmers. About 1,000 consumers are in the commercial or industrial category.

According to the cooperatives, the commercial power company soon displayed a vast eagerness to serve the people who had moved into the newly developed areas. It built lines into co-op territory to serve housing and industrial developments, duplicating co-op lines already built. Newcomers were often persuaded to sign up with the commercial utility, unaware that co-op service was available from lines closer than those of the company. The company developed a large field service staff, thus keeping posted on suburban development projects. On the basis of information thus derived, the company on several occasions negotiated with the individual co-ops either to purchase or trade territory. Whenever the co-ops have showed unwillingness to negotiate, the utility threatened to invoke restrictive clauses in their power supply contracts—a type of “persuasion” which was sometimes effective. Once a cooperative did make

a swap—and soon realized that it got the worse end of the bargain.

SEPA was established a few years ago by the four electric cooperatives to fight off these raids. Its central office is located in South St. Paul, and its executive director, called “field representative,” is Martin E. Shields.

Shields is a dynamic and personable man who has been for many years a member of the board of directors of Dakota County Electric Cooperative. He has lived for more than three decades on a farm eight miles from downtown Twin Cities. It is now entirely surrounded by housing projects and industrial commercial enterprises. But Shields has warm memories of the times when the entire area consisted of farms, when he and others did missionary work to establish the cooperatives, and later worked hard to expand and broaden their facilities to meet the increasing demand for service.

SEPA’s tasks are numerous. To industrial park developers, real estate firms, contractors, engineers, business enterprises, county and municipal planning boards and Government bodies, it provides a wealth of up-to-date information, gleaned from its members, in advance of investment. Then it sees to it that builders are provided with adequate and efficient electrical service right from the start of construction.

To the individual system whose area may be affected, it reports news about intentions to build or buy property of all kinds.

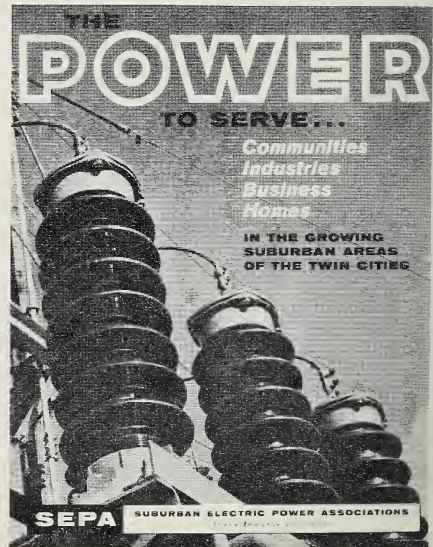
It presents to the public an accurate picture of the cooperatives and their history of service to the Twin Cities suburban area. To accomplish this Shields sends frequent news releases to local papers and news services, and attends many community meetings. He arranges for clubs and youth organizations to tour the headquarters of the

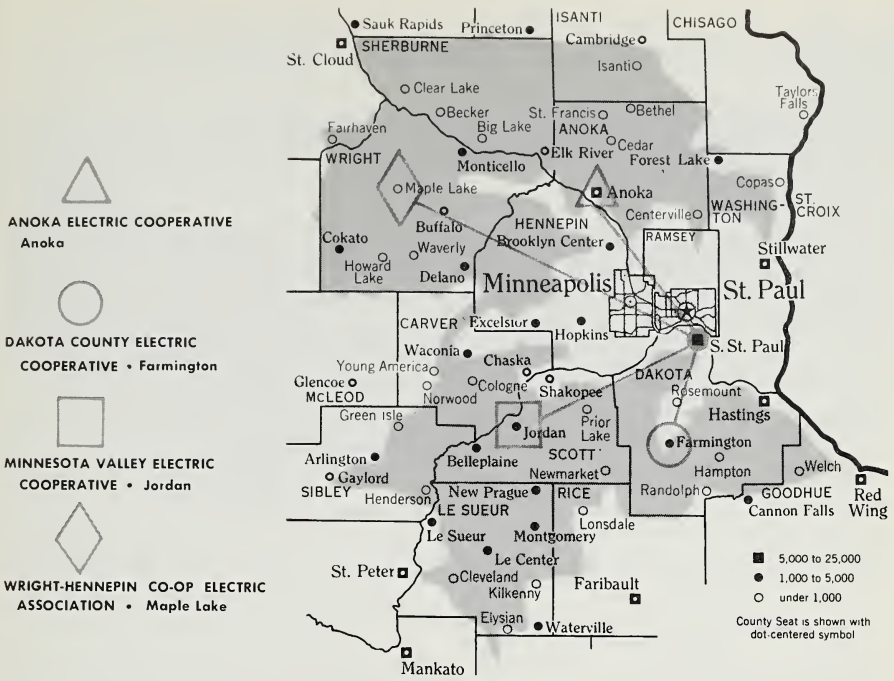
cooperatives, and get first-hand information about the rural electrification program and the part that Minnesota cooperatives have played in it.

And SEPA explains to all concerned that its four members are not seeking to expand into the service area of commercial power companies but do intend to continue their efficient, home-based operations in areas they have served since their inception.

SEPA performs another major function. Without infringing on the separate identities and operations of the individual cooperatives, it enables them to exchange information on ways of improving their internal operations. For instance, two years ago only one member of the quartet had a power use advisor. Now a second member has hired one, and a third has employed a husband and wife team to handle its education and power use.

Cover of handsome brochure issued by Suburban Electric Power Associations to encourage housing subdivisions, industries and business to settle in area served by its member cooperatives.





Area around Twin Cities served by the four cooperatives which make up SEPA.

Engineering has been strengthened. Two newsletters have been started. All this in addition to the vitally important fact that not one of the four co-ops has made any trades or sold any line since SEPA was formed.

The second annual meeting of SEPA, held last May, was marked by an air of confidence and enthusiasm. The 42 directors and management personnel at the meeting agreed that, acting together, they have made excellent progress toward solving a number of their problems.

Harold LeVander, legal counsel for the Suburban Electric Power Associations, and active for many years in behalf of the Minnesota rural electrics, recently commented that the formation of SEPA has benefited the co-ops far

more than they had expected. In LeVander's words: "They've come to realize that they're not simply rural electric systems, but rather electric power suppliers in fast-growing suburban areas. In addition, SEPA's public information program has given the cooperatives tremendous status with local business firms, banks, real estate developers, and with county and municipal officials."

Through this experiment in teamwork, four established Minnesota cooperatives are adding new dimensions to the services they offer. In other expanding areas of the United States where REA-financed cooperatives face similar challenges and problems, SEPA may suggest an answer to some of their questions. □



Custer Power District Aids Nebraska 4-H Camp

Tourists traveling west on Nebraska Highway 2 near Halsey are surprised when they see the almost interminable range land broken by a 90,000-acre forest lying south of the highway.

Those familiar with this immense national forest are now equally surprised at seeing a \$150,000 two-story lodge rising up above the green ponderosa pine. This is the newly-built recreation center for the State's 4-H Clubs. From its picture windows can be seen the 30-acre stretch of nursery beds connected with the forest, the Nebraska sandhills and the winding Middle Loup River.

Inside the main lodge are all of the facilities needed for an educational program, including classrooms, a handicraft room, a recreation hall, a dining hall, a splendid kitchen and a museum on the soil, people and wild-life of Nebraska.

It was opened last summer, with 3,000 4-H members attending at various times from all parts of the State. The ultimate cost of the camp will be \$200,000, of which 4-H members are raising half. The 11-acre site was leased from the National Forest Service, an agency of the U. S. Department of Agriculture, for 99 years at a cost of \$25 a year.

From the beginning, the Custer Public Power District of Broken Bow has taken a strong proprietary interest in this center. Realizing that the all-electric main lodge would be a good consumer—of which more later—it worked closely with the architect and builder on every phase of the project. All this any power supplier might have done,

but few would have donated \$8,000 toward the costs of electrical installation, as Custer PPD did. And even fewer would have boosted 4-H concepts as enthusiastically and sincerely as the District has.

From the first, manager Dick Wilkerson, president Frank J. Haumont, and their staff have been active in spreading 4-H ideals and in emphasizing the usefulness of the camp for Nebraska youth. Tirelessly they have pointed out to the people of Halsey and neighboring towns and counties the importance of the camp as an instrument for providing Nebraska boys and girls with unsurpassed opportunities for craft, nature and conservation study, as well as for sports and recreation. As early as June 1959, power utilization director Alfred Hilpmann wrote for *The Electric Farmer Magazine*, organ of the Nebraska Rural Electric Association, the first of a series of articles urging statewide support for the project.

And in the winter of 1961-62, when the wiring contractor got into a manpower jam, Hilpmann and electrification advisor Ivan Nelson literally got on their hands and knees to help. As Hilpmann put it. "We actually assisted with the installation of forty-two 800-watt heating cable units. These units, comprising 6,720 feet of heating wires for covering a floor area of 3,200-plus square feet, had to be stapled directly upon the first layer of the concrete floor. The consistency of the concrete had to be just right to accomplish this.

"We started early one Friday morning and continued for many hours to



All-electric 4-H Camp served by Custer Public Power District, Nebraska.

install thirty-five 160-foot units in the building. The following day we finished the rest of the installation and secured the cold units leads in the six 10x10x4-inch junction boxes. The job took 21 hours, including travel time to and from Halsey.

“Not until these heating cables were imbedded in the concrete floor could further construction inside the main lodge be continued. More than 10,000 staples were used to secure the heating cable to the concrete, and what a help knee pads would have been!

“The 25,200 watts of heating will contribute somewhat to the overall heating requirements of the building. The main reason this system was designed and installed is to offset the usual cool temperature of the concrete slab floor. It will be controlled by on and off switches, through high- and low-voltage relays, and should be satisfactory from the standpoint of both economics and performance.

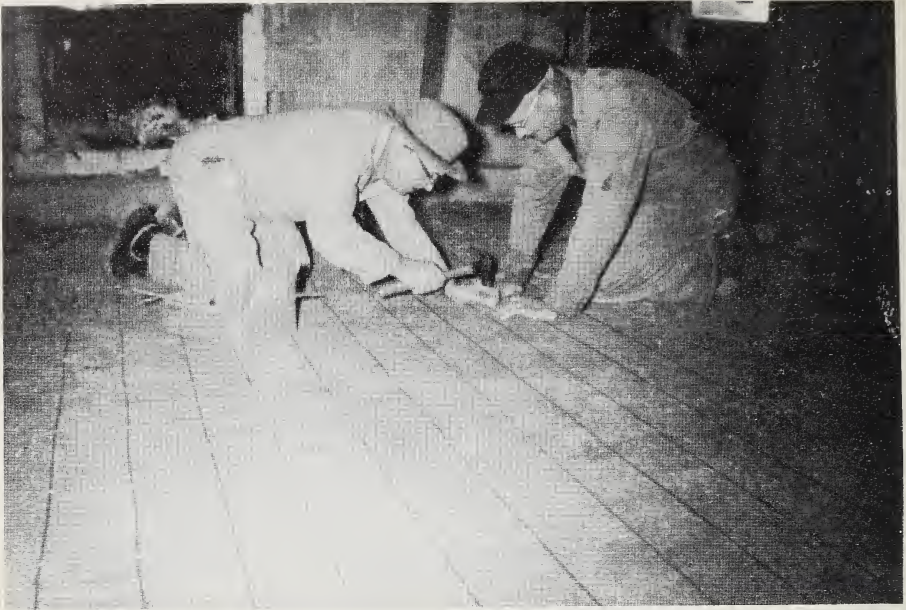
“The rest of the electric heating equipment will consist of baseboard

units, wall panels and other types of units. These will be automatic and function through sensitive wall thermostats.”

More specifically, the heating units used are: baseboard, residential type, 1,250 watt sizes; radiant wall panels, 1,000-1,500 watts; forced air wall panels, 4,000 watts; and suspended (wall mounted) forced air units, 3,000 watts.

The all-electric kitchen contains two ranges, a freezer, cold storage area, garbage disposal, mixer and sinks. Supplying the water needs of the camp is a 100-gallon-per-minute well, powered by a 7½ h.p. motor. Electric hot water heaters and other devices round out the all-electric lodge.

Power for the lodge is supplied from a three-phase, 112½ KVA, pad-mounted transformer. The main service entrance is 1,200 ampere, 120/208 volt, three-phase, four-wire grounded neutral. This supplies service control equipment which furnishes single-phase service for the lighting load and



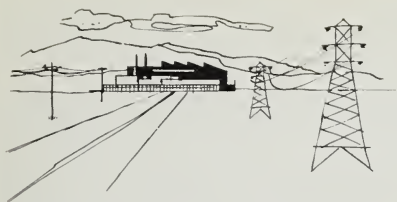
Alfred Hilpmann (left), power use director, helps wiring contractor secure cable to concrete floor of 4-H Camp. They are using hedge post-type staples.

single-phase appliances, and three-phase service for the heating load and three-phase equipment.

The ampere load for the main lodge is 506, with a demand of 445 amperes. The potential connected ampere-load may reach 671 and the demand on this could reach 610 amperes.

The center includes 13 cabins, two bath houses and various other buildings. These, and playing fields now being cleared, will provide educational and recreational facilities for others beside 4-H boys and girls. Many grade schools have indicated an interest in having conservation study days at the camp as part of their school study program. Family camping will be possible because of the design of the smaller cabins. Primitive or tent camping is available to groups wishing to rough it for a night or more. And finally, the camp is open to youth and adult groups for all types of camping, conferences and other meetings.

In many respects, including its zeal for community services, Custer PPD is a typical REA borrower. It was started in 1945 in a thinly settled area, with practically no capital, and with the expectation that each consumer would use 100 kwh per month. But its first consumers — mostly isolated ranchers—believed that they were just as much entitled to the blessings of electricity as other Americans and were grimly determined to get them. Even now, the District's net worth is only 13.7 percent of assets, and it serves only 1.4 consumers per mile, but REA assistance, average monthly consumption of 346 kwh, and good management have pulled it over the hump. Of the \$6,750,000 that REA has advanced, the District has already paid \$1,210,000 in principal, \$835,000 interest and \$577,000 in advance payments. The District serves 5,500 consumers over 4,000 miles of line. □



INDUSTRIAL TRENDS IN THE MIDWEST

by Dwight Nesmith

(Extracts from a talk given last May in Kansas. Although dealing mainly with conditions in Kansas, this provocative talk has obvious relevance to many rural areas. The author, who teaches engineering at Kansas State University, has helped conduct industrial surveys of nearly 100 communities.)

What can people do about helping the State through industry? And why should you want to? Why do I claim that industrial development holds the key to prosperity?

All industrial development is a two-way street. Any sound program which will produce predictable results must be based on the idea of mutual benefit. We must begin by asking ourselves two kinds of questions:

1. Why does your town want industry and what do you have to offer?
2. Why does industry want your town and what does industry offer?

Many inadequate communities have chosen to ignore reality and have entered into "bribe" and "give-away" programs. They hope to overcome their weaknesses by offering free land or free buildings or tax-exemptions. While these programs initially had some merit in that they were expressions of healthy community attitudes, few solvent, vital industries can be fooled into accepting relatively small bribes and gifts to counteract the long range drawbacks of a patently inadequate community.

It has been estimated that of about 42,000 Kansas farm boys who reached the age of 20 in the decade between 1950 and 1960, as few as 7,000 will be able to stay on the farm. That should be incentive enough for everyone in the State of Kansas to put forth a 100 percent effort to provide off-the-farm

opportunities for these boys. This is our most valuable resource and this is the only thing we have to offer industry. We have a desirable labor force, trainable, productive. We must create an atmosphere in this state which will make industry want to use them here instead of pirating them away to other states.

We can offer labor at competitive rates which are second to none. But we must adjust our training programs so that this labor is better trained to handle industrial jobs. We should no longer build educational programs to prepare our young people for opportunities which ceased to exist a decade ago. Vocational training must come to mean more than another boys' club or bright blue jackets; we must establish up-to-date, worthwhile, post-high school technical training for those young people who are not going to college.

What kind of industries shall we try for? There are two kinds. First, we must continue to put forth effort to establish industries related to the production of food. The population of Kansas and of the Midwest is growing slowly, providing new markets for both fresh and processed foods each year. We must make an effort to obtain a larger share of this future market. Many types of manufacturing are expanding rapidly on a national scale but showing no growth in Kansas. The food-processing industries rank high



Professor Dwight Nesmith

on this list. We must be realistic and attempt to get more of the processing of crops and livestock done here within the state.

Eighty-four percent of all manufacturing firms in the United States today are located where they are because that is where they started. They are financed with local money, operated by local brains and the risks are accepted by local guts.

So there were two kinds of industry that we must try for in order to provide a market for agricultural resources. The first is the food processing industry, the second category is anything else you can start. Any manufacturing plant that opens in your area provides jobs for the young fellows being squeezed off the farm and provides consumers of fresh fruits and vegetables. The farm community should be solicited for the sale of stock in community industrial foundations and

should be given the opportunity to share the responsibility for area growth as well as the benefits of such growth. There is surely nothing that increases the value of a piece of farm property like having a prosperous, growing city pushing against its fences.

In summary, here are eight points which I feel are important if we are to take advantage of our opportunities.

1. Stop waiting for someone from the "outside" to come in and start new industries. We are going to have to save ourselves.

2. Stop waiting for scientists to find new uses for what is being grown. Major advancements will probably replace agricultural products rather than create more demand.

3. Concentrate on producing food, especially foods now being imported into this area.

4. Work to establish food processing industries in Kansas, concentrating on home-grown, home-financed industry.

5. Work to create a favorable business climate in Kansas, stressing a proper attitude toward business and equitable taxation in place of "stick business" tax laws.

6. Spend more time preparing farm youngsters to find a place in an urban society.

7. Work for the improvement of living conditions, upgrading of schools, and orderly growth in your town and region.

8. Work to develop your imaginations. Stop clinging to musty relics of the past. Just a short time ago, we sent a man around the earth three times in about five hours. When Jules Verne wrote about a trip around the world in 80 days, he was laughed at. So think in terms of the future, not the past. □

Why Electric Cooperatives Encourage Area Development

by Owen Manning, Manager, Tuscarawas-Coshocton Electric Cooperative, Ohio

Recently I had occasion to discuss our current scholarship program with principals and counsellors of many of the high schools in our service area. A small percentage of graduating students expect to attend college and an even smaller percentage expect to make farming their life's work. Only one or two boys in many of our graduating classes expect to pursue farming as a career upon graduation.

A large number of family-type farms within our service area are no longer in existence. According to Department of Agriculture statistics, the number of farms in this country dwindled by another 125,000 in 1961. It has always been my feeling that farm people were the backbone of our Nation and I dread to see the rural population dwindle.

In our service area the towns and villages are still highly dependent upon the rural population for their products and their services. The economy of our community depends in large part upon a strong rural economy. It is my firm belief that the economy of the rural area is as important to the success and survival of the American free enterprise system as any other factor that could be mentioned.

For this reason our cooperative is interested in rural area development.

We are proud of the many large and small industries scattered throughout our service area. They have offered full-time and part-time employment to many of our people.

We are also interested in encouraging new industry to develop within the rural areas. It will be said that our interests are selfish because we wish to sell more power. To a certain extent, this may be true, but our interest goes much further than this. We will do all that we can to encourage industry to locate in this area whether it is served with electricity from our system or not. If it is a good industry for our area, we will do all we can and cooperate with others to bring this industry to our area. It will offer employment to our people and, in many cases, might mean the difference of whether or not some family-type farm will survive. It is very likely that any new industry locating in our area will offer part-time employment for many of our rural people and smaller farmers. It may encourage some of our high school graduating seniors to stay in our rural area, to seek part-time employment in a local industry and to operate a family-sized farm.

If we can accomplish this purpose, then our efforts will not have been in vain.

Helicopter Sets Poles in Oregon Forest

An electric cooperative in Oregon has punched its way through one of America's last great stands of virgin timber in order to supply central station electricity to a "forgotten" town of 130 inhabitants.

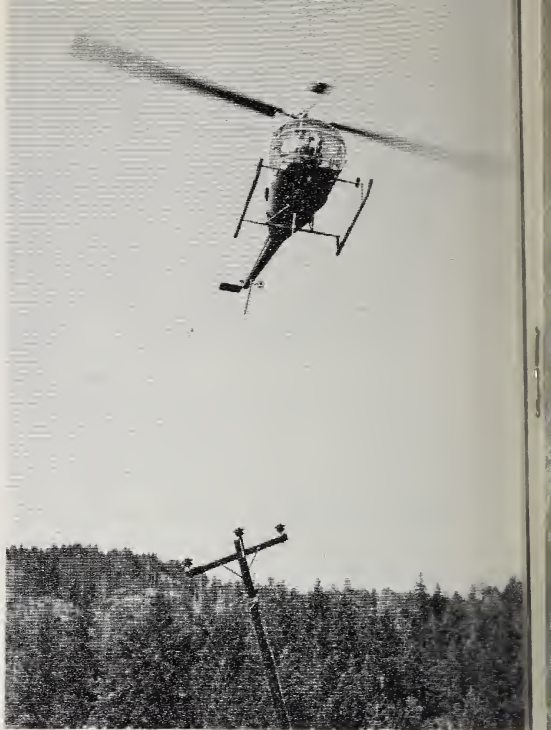
The terrain is so mountainous and wooded that all but a few of the tap line poles had to be transported and set by helicopter.

A loan from the Rural Electrification Administration helped Coos-Curry Electric Cooperative, with headquarters at Coquille, Oregon, make the 37-mile connection.

The town is Agness, 32 miles up Rogue River from Gold Beach on the Pacific coast. The river has been the town's main access route since it was founded. The Agness post office, established in 1895, is one of the few post offices left in the United States which still gets its mail by boat. Once these boats were poled up the river; now power boats are used.

The remote, rugged beauty of the Rogue River has been widely recognized for many years. Herbert Hoover fished the upper reaches of the river. So did Generals LeMay and Spaatz, Clark Gable, Ernie Pyle and even Myrna Loy and Ginger Rogers.

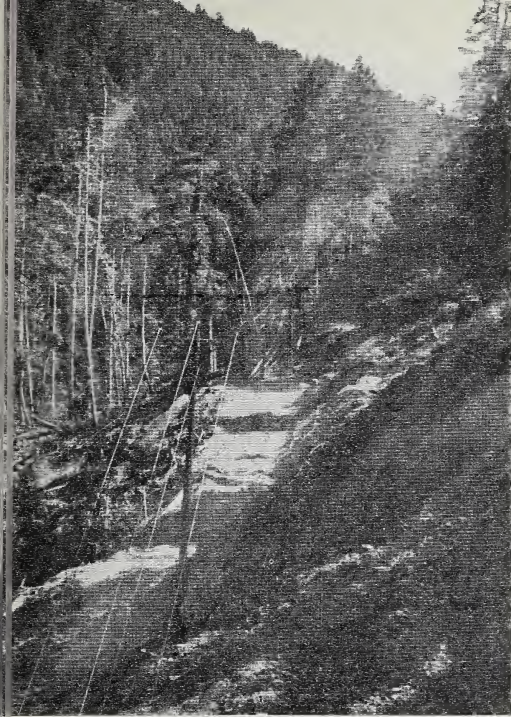
The only other route to Agness is a rugged trail leading from Powers. It is gradually being improved, but greater reliance is being placed on a new timber access road being built from Gold Beach. With the completion of this road in 1964, and the arrival of electric power, the old way of life in Agness is coming to an end.



Helicopters were used by Coos-Curry Electric to build 37-mile, 2,000 kv transmission line to Agness, Oregon.

View of scenic Rogue River, along which transmission line is built. Its beauty has been recognized by many.





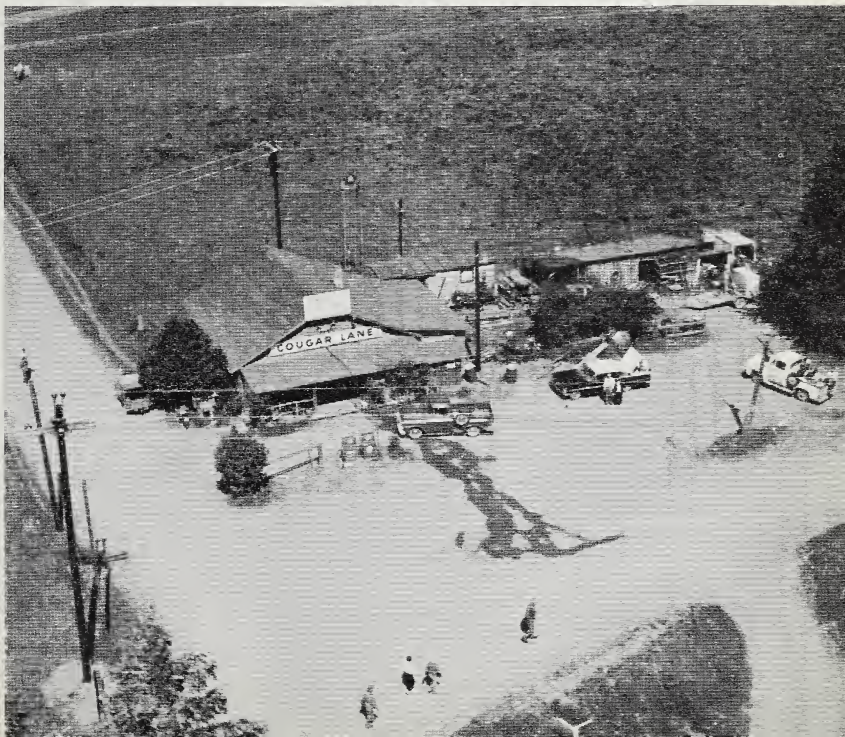
*Los-Curry Electric punched its way through
this great stand of Douglas Fir timber to supply
Agness with central station electricity.*



*A citizen of Agness lights her oil lamp
for last time.*

*tion lines were
us persons.*

*The "business center" of Agness before electrification begins to trans-
form almost every aspect of the town's business and social life.*





Every board and piece of furniture in this Agness home had to be hauled up the Rogue River by boat or packed over mountain trails when house was built.

If history is any guide, Agness citizens will soon be using their 92 new meters for more than lighting. They will be purchasing all kinds of appliances and perhaps using electric power for mining. This is precisely what has happened in other areas where REA electric borrowers have come into being in order to provide central station power. In the process they have built a multi-million dollar market for electric machinery and appliances.

Twenty-seven years ago, when the Rural Electrification Administration was founded, a scant 11 percent of the farms in the country had electric power—and most of that was used for lighting. Now 97 percent of rural America is electrified—and electricity is used in 400 different ways.

Mining, commercial fishing, guiding and tourism have been the main sources of revenue over the years for most of the residents of Agness. Some of these activities will remain, thanks to the fact that a mile-wide strip on

each side of the Rogue River has been set aside by Congress as a wilderness area. But as the attributes of civilization become available in the area, new sources of revenue and new ways of living are destined to open up.

It was the old ways, however, that were featured in the ceremonies held to mark the power line dedication. Sponsored by the Agness Community Council, events included a beef barbecue, a white-water boat race, a log sawing contest, and a pole climbing contest. Present were officials from the Rural Electrification Administration, the Bonneville Power Administration, and Coos-Curry Electric.

The new Coos-Curry consumers represent part of the 1,000 new consumers and 100 new miles of line that the cooperative is adding, with the assistance of REA loans. It now has 6,000 consumers over 900 miles of line. It has already returned to REA, on principal and interest, over \$1.6 million. □

REA Issues Report On Loans Made In Fiscal Year 1962

The Rural Electrification Administration has announced that more than 240,000 rural people will get their first REA-financed electric or dial telephone service as a result of loans made by it between July 1961 and the end of June 1962.

In addition, hundred of thousands of existing consumers will get increased supplies of dependable, low-cost power, according to a report issued last month.

The loans approved by REA during fiscal 1962 will enable local electric systems to provide service to 87,527 new consumers. Telephone loans will provide new or improved service, all dial, to 153,892 subscribers.

REA approved 242 electric loans in fiscal 1962, totaling \$261.4 million. This brought to \$4.6 billion the cumulative total of loans approved in the 27-year-old electric program.

Of fiscal 1962 loans, 59.4 percent were made for generation and transmission facilities needed to meet increasing power requirements of rural consumers. This was the highest percentage of generation and transmission loans for any year of the REA program. In fiscal 1961, 55.3 percent was for generation and transmission purposes.

The 1962 loans authorized additional generating capacity of 664,600 kilowatts, bringing to 3.5 million kw the total energy production capacity provided with REA financing. The installed capacity of REA-financed systems is about 1 percent of the electric industry's total.

Five new electric cooperatives, three power-type and two distribution, were added to the list of REA's active borrowers during the year. There are now 993 active electric borrowers in 46 States and Puerto Rico.

Included in the 194 telephone loans approved by REA during fiscal 1962 were loans to 43 new borrowers. They increased to 790 the number of telephone systems financed by REA during the 12½-year-old program. Of these, 576 are commercial companies and 214 are cooperatives. REA's fiscal 1962 loans of \$92.9 million brought to \$909 million the cumulative total of telephone loans approved by REA. The REA-financed rural telephone systems are located in 46 States and the Virgin Islands.

REA electric and telephone borrowers continued their excellent repayment record during fiscal 1962. They made principal and interest payments at the rate of \$17.1 million a month, for a combined yearly total of \$205,692,419.

Electric borrowers now have made payments to the Federal Government totaling \$1,630,239,321. This includes \$911,981,911 repaid on principal, \$532,400,567 paid in interest, and an additional \$185,856,843 paid in advance of due dates.

Payments by telephone borrowers amount to \$81,266,591. They include \$37,878,564 repaid on principal, \$37,025,322 paid in interest, and \$6,362,705 paid in advance of due dates.

New Energy Sources Stir Interest

A search for energy sources even more exotic than nuclear energy is under way in the United States and other countries.

The objective is "little black boxes" in which the energy of heat, light and chemicals will be converted directly into economical electric power.

Widespread commercial applications of these experiments lie in the far-distant future, it is admitted, but the research has its own fascination.

The stimulus for these investigations arises from demands for power sources for space satellites. Coupled with it is the desire of developing nations to find low-cost and plentiful power supplies. Meanwhile, advanced nations hope to develop more efficient and economical energy to meet their ever-growing requirements. It is predicted that these new sources of electricity will produce little or no smoke, virtually no waste products, and will be light, compact, noiseless, simple, reliable and efficient.

Here is a description of some of the new ways of producing electricity now being explored.

1. Electricity is produced directly from any type of heat source capable of producing temperatures up to about 1,000 degrees Centigrade through heat-stimulated electron action in small blocks of semi-conductor alloys.

2. Electricity is generated directly from heat in the range of 1,000 to 2,500 degrees Centigrade by means of a gas-filled tube in which electrons boil off from a heated cathode.

3. A thin layer of a photo-sensitive material in a solar cell converts light to electrical energy. The fuel is sunlight exploited by the solar cell. Con-

version efficiencies of up to 12 percent are reported.

4. Electrical energy is delivered directly from continuous chemical reaction of air or oxygen with various fuels in packaged devices (fuel cells) that resemble storage batteries. There is no need for recharging. Adding more fuel recharges the cell.

This interest marks another step in man's constant search for the more efficient production and utilization of energy. In the early power plants, for example, only about 2.5 percent of the energy in coal could be used. This has been brought to about 40 percent or more—about twice the relative efficiency of the automobile engine.

Even while some scientists and engineers are trying to solve the problems attending the use of nuclear energy, others are making progress toward the long sought ideal of converting heat and chemical energy into electricity directly.

In a recent laboratory experiment, the principle of magnetohydrodynamics was successfully used. In this process, a stream of ionized gas is passed through a magnetic field, producing electricity. Even though commercial feasibility of this process would do away with the conventional turbine-generator, 12 electric utilities and a manufacturer sponsored the project.

The number of researchers in this area is growing steadily. Two years ago a Pittsburgh conference on the subject of exotic power conversion drew some 800 scientists and engineers from major domestic companies. Last year experts from 61 nations met in Rome for the first United Nations

Conference on New Sources of Energy. At the Massachusetts Institute of Technology, one of every twenty faculty members and graduate students are

working on some phase of this subject. More than 50 U. S. private companies—including some of the largest—are involved. □

Iowa School Heats Pupils, Not Rooms

Consolidation of seven school districts, approval of a \$454,000 bond issue—and the realization that centrally located, well-equipped schools are necessary for training children in the space age—formed the preliminaries for a recent ground-breaking ceremony seven miles south of Muscatine, Iowa.

Here the Louisa-Muscatine Community School District is constructing a senior high school building for 250 students. It will provide more than 32,000 square feet of educational facilities including 13 teaching stations, administrative offices and a gymnasium. The design makes provision for adding, if required, seven classrooms and other facilities to give the school an ultimate capacity of 460 students.

The building will be heated entirely by electricity, making it possible to individualize room control on the combination unit heaters and ventilators. The supplier will be the Eastern Iowa Light and Power Cooperative, whose motto is "The Power Line with the Farmer in Mind."

Originally, the Board of Education and architects were skeptical about the possibility of heating the school electrically but changed their minds after meeting with Cooperative employees and visiting the electrically heated Lin-Mar School near Marion, Iowa, and the electrically-heated college at Greenville, Illinois. As one consequence, the projected boiler and furnace room will become a utility room.

The heating system in the gymnasium will be patterned after combination heating and lighting units employed at the Greenville college. Five kilowatt infrared quartz heaters will supply both light and heat. The units do not heat the air directly but warm the gymnasium floor and the players almost immediately after being turned on.

This type of heating makes it possible to keep the heat off in the gym until just before a physical education class or a game, rather than keeping it heated all the time. Greenville school officials pointed out that students can be comfortable under the revolutionary heater-lights even when the air temperature is considerably below normal.

All exterior walls will be insulated with expanded polystyrene insulation with the exception of the areas where the infrared heat is used—the gym and shop area.

In most of the building, the heating will be accomplished with combination heating and ventilating units. However, the halls will have convector heaters and the administrative offices will have baseboard radiation heaters.

On September 11, 1961, the voters of the L-M district gave their approval to the bond issue and in December the bonds were purchased at a rate of less than 3.4 percent interest. In March 1962 contracts were awarded. Completion date is July 1963. Plans include football fields, baseball diamonds, tennis courts, and a parking lot. □

New and Revised REA Bulletins . . .

New Bulletins:

345-23 (6/15/62), "REA Specification for Building-Out Capacitors." Describes REA minimum requirements for building-out capacitors purchased by REA telephone borrowers.

Revised Bulletins:

181-2 (5/18/62), "Standard List of Retirement Units." Reflects changes necessary to make the bulletin conform to revised uniform system of accounts and current accounting procedures.

184-2 (5/18/62), "Suggested Work Order Procedure." Reflects changes necessary to make the bulletin conform to revised uniform system of accounts and current accounting procedures.

320-4 (6/14/62), "Preloan Procedures for Telephone Loan Applicants." Describes current policies and procedures relating to REA loans for financing the improvement and extension of telephone service.

61-8, 361-8 (6/15/62), "Inductive Coordination for Power and Communication Facilities." Provides telephone and electric borrowers with up-to-date instructions for avoiding inductive interference on communication facilities.

100-5, 400-3 (6/18/62), "Agreements for the Operation and Management of Borrowers' Systems." Emphasizes need for REA electric and telephone borrowers to operate and manage their own systems.

321-2 (6/20/62), "Loan Security Requirements for Telephone Loans." Announces changes in REA policy on loan security considerations for future telephone loans.

340-1 (7/5/62), "Final Payments to Contractors, Engineers, and Architects—Telephone Program." Provides up-to-date references to REA bulletins and contract forms in this field.

341-1 (7/5/62), "Final Statement of Engineering Fee and Certificate of Engineer, Telephone Engineering Service Contract." Describes revision of REA Form 506, Final Statement of Engineering Fee.

404-1 (7/5/62), "Approval of Connecting Company and Special Service Contracts and Leases." Describes changes in REA requirements regarding approval of billing and accounting service agreements and short term directory agreements.

Supplements and Partial Revisions to REA Bulletins:

109-2, 409-3 (5/17/62), "Labor Relations." Brings to the attention of REA borrowers a National Labor Relations Board decision holding that an employer must bargain with the union representing his employees regarding the use of subcontracts.

103-6 (5/31/62), "Manager's Monthly Report to the Board of Directors." Amplifies memorandum of January 31, 1962 relating to this subject.

44-2, 345-1 (6/11/62), "Specification for Wood Poles, Stubs, and Anchor Logs, and for Preservative Treatment of These Materials to be Purchased by REA Borrowers, Electric and Telephone." Announces changes in REA requirements regarding steam conditioning of southern pine poles.

344-2 (June 1962), "List of Materials Acceptable for Use on Telephone Systems of REA Borrowers." Brings the 1962 basic list of acceptable materials up to date. □

Saga of Scotchman Creek

You're 70 years old.

Your name is Journey ("Journ") McCall and you live with your wife on a 59-acre farm on a path off Bull Pen Road in southern Jackson County, North Carolina. The area is called Scotchman Creek and it's a little hard to find since it's almost completely surrounded by Government forest land.

You've lived here all your life except for 23 months spent in the armed services during World War One. Your wife, 64, was born and reared in Jackson County too. You live on your military pension and social security benefits. You also farm a little, tend bees, have a cow and a few chickens. You've never been rich but raised three fine boys and two girls, all of whom have moved away except one daughter.

Is that any reason why you shouldn't have electric lights? Especially now that P. D. Daniels, who built a summer home on Bull Pen Road last year, has it?

Yes, you realize that it would mean building 3½ miles of line over rugged and wooded terrain, and cost \$8,500. But it isn't only lights. Maybe you can buy a radio, range, iron, water heater, refrigerator, washer, and even a home freezer when you're able to pay for these things which other people have.

Maybe some of the children might want to come back and build homes at Scotchman Creek when electricity is available.

This might be R. C. Sheffield's side of a conversation with Journ McCall, an applicant for service with the Haywood Electric Membership Corporation. It is a cooperative managed by Sheffield and financed by the Rural Electrification Administration.

This conversation never took place—because Sheffield has had all this information at his finger tips for a long time. In Jackson County you know these things about your neighbors.



Mr. and Mrs. "Journ" McCall

Sheffield knows about a few other things too—like "area coverage." What this term means is that every electric system that borrows money from REA must attempt diligently to extend service to anyone within a given area who wants it, no matter how remote his farm is.

Sheffield remembers also that the McCalls had signed up for electric service and paid their membership fees in the cooperative several years ago—and had refused to accept a refund of the fee when the job seemed impossible. They just knew they'd get electric service some day.

Sheffield and his board of directors weighed the factors. After all, if they extended the lines to the McCall farm, they would also pick up Journ's cousin, Clinton McCall, as a consumer. Clint and his wife have a 58-acre farm adjacent to Journ's. They have no children and they too would be using

only electric lights for the time being—with the same hopes of being able eventually to own a refrigerator, washer, radio and the rest. Clinton McCall farms a little, breaks ivy and spray for sale to tourists in season, and does odd jobs off the farm during his spare time.

Then there is Paul Bryson, who has an old home place in another cove about half a mile from Journ's premises. He visits it on week-ends occasionally, and some day may want

wouldn't pay more than the \$1.25 monthly minimum, since services would be held so infrequently, but it's a thought.

Sheffield and the Haywood Electric board of directors gulped—and took the \$8,500 plunge. The route of the electric line was staked, and on May 7 the right-of-way clearing and construction crews of the cooperative went to work. The lines were finished, meters installed and electricity turned on for



The road to Scotchman Creek. It cost Haywood EMC \$8,500 to build a line through this remote territory in order to bring electric power to Mr. McCall.



"Journ" McCall watches as a Haywood Electric Membership Corp. employee attaches the first meter to his home.

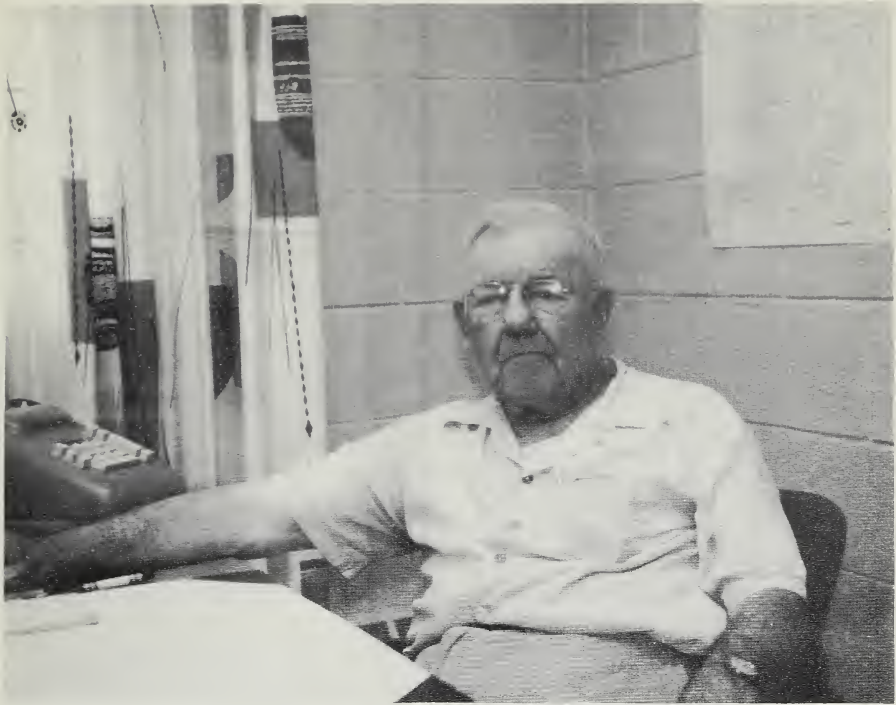
electric service on a seasonal basis. And what about that Atlanta doctor, who has a piece of property and a summer cottage along Bull Pen Road? Didn't he once tell Journ that he too might take electric service on a seasonal rate basis?

Come to think of it, Pleasant Grove Union Church is only a little distance off Bull Pen Road. Of course, services are held here in the daytime only, but the parishioners might decide to have electric service. To be sure, it

the two cousins exactly one month later.

But you can't say the cooperative didn't do it up handsomely. It is providing central station electric service to Journ and Clinton McCall on the cooperative's monthly minimum charge basis, without guarantees or extra charges.

And there's always a chance that some of the children may yet decide to return to Scotchman Creek—now that there's electricity on the farm. □



“MR. THORNTOWN”

A town is known by the companies it keeps—whether they be water companies, electric, telephone, or whatever.

When they are good, they reflect favorably upon the people who live in town. In particular, they pay tribute to the efforts of a few tireless leaders in the community.

The services in Thorntown (population 1500), located in west central Indiana, are more than good. They are excellent. In this case the quality of the city's sewage, telephone, water supply, fire protection and other systems can be attributed mainly to the efforts of one man, Owen E. Curry, “Mr. Thorntown” himself.

As president of the town board (a position he still holds), he directed the construction of a new 100,000 gallon water tower, a pumping plant and a

filter processing plant which provided the townspeople with enough pure water for all purposes. He supervised the extension of the water system to cover all lots within the town so that every landowner has access to water connections. The original water lines, Mr. Curry likes to point out, were installed by Anson Mills, inventor of the Anson Mills rivetless cartridge belt.

Mr. Curry was the force behind the installation of a sewage system which is connected to all lots. The town operates one of the first lagoon oxidation ponds built in Indiana. First put into use in 1960 at a fraction of the cost of conventional sewage disposal plants, it is large enough to serve three times the numbers of residents presently connected to it.

Under Mr. Curry's leadership, large strides have been made in rehabilitating the town's municipally-owned electric distribution plant. Recently it provided lighting systems for the town's tennis courts and two baseball diamonds (regular and little league).

The streets have been substantially improved, and a new modern fire truck has been purchased.

Mr. Curry has served as a director of the Thorntown Telephone Co., Inc. for 24 years and as president of the Board for the last 9 years. During his term as president, the Company cutover to dial service in December 1960, and is currently reducing rural party-line service from eight to five parties. By fall of this year the Company also expects to reduce its town service from four to two parties on a line. All of this upgrading is being accomplished without an increase in rates.

At the time of the cutover to dial service, the Company buried 40 miles of cable and installed 55 miles of new aerial outside plant. It is presently

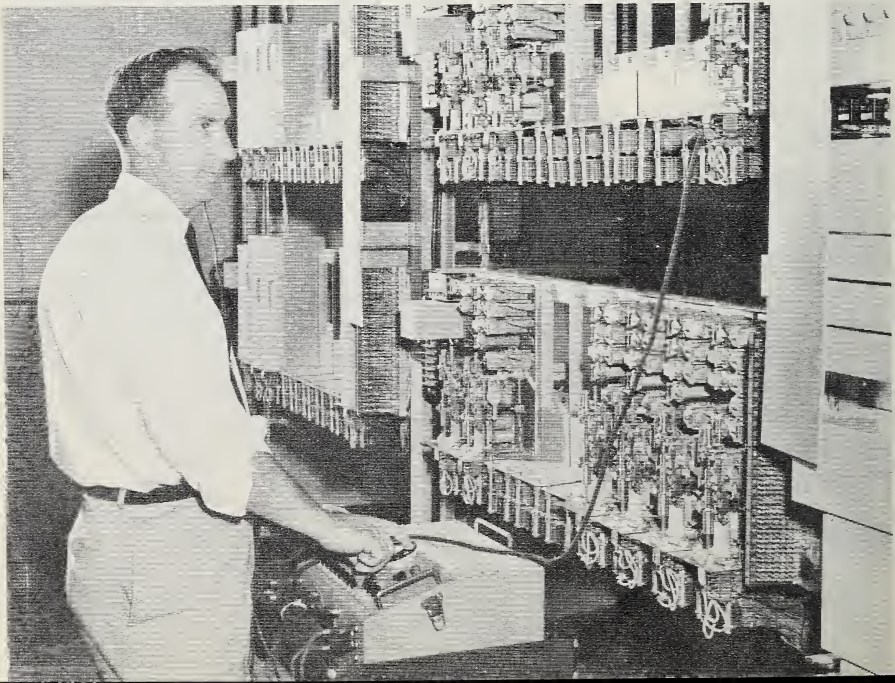
serving 734 main stations with 152 extension users.

One of Mr. Curry's best and most daring inspirations, perhaps, was to appoint as manager a man without any previous telephone experience. Gerald White, appointed in 1959, accomplished most of these changes in the system. Formerly a member of the counter-intelligence corps of the U. S. Army in Germany, he is now president of the Indiana Rural-Urban Telephone Association, composed entirely of REA borrowers.

All this Mr. Curry accomplished while serving a stint of 49 years, 7 months and 28 days as a rural mail carrier. During that time he used up 3 horses, 2 motorcycles and 22 automobiles. He is now driving his 23rd automobile.

The logic of the English language dictates the notation that he performed his civic services "part-time" and is now "retired." So far as Mr. Curry is concerned, it looks as if somebody had better come up with new definitions for these words.

Gerald White, manager of the Thorntown Telephone Company, which recently cutover to dial. Mr. Curry has been president for 9 years, a director for 24.



Effective Safety Promotion

Last year one of every 20 Americans had a disabling accident. Total count, according to the National Safety Council, was 91,000 killed, 9,200,000 others injured. Cost to the Nation, \$14,000,000.

Can you, representing an REA borrower, help to reduce this shocking toll?

Citing statistics like those above won't help much. The trouble with statistics is that they don't make much of an impact—except on statisticians.

Safety talks, phrased in general terms, don't help much either. It's easy—and necessary—to tell your employees frequently to work safely and drive safely, but there are better methods. Like this one.

How about looking into the handbook and checking your linemen on specific safety regulations?

For instance, do they know these easy-to-follow instructions for wearing life-saving hard hats? Are *they* observing them? Are *you* enforcing them?

1. Adjust the head band to fit properly. Wear it level on your head, not tilted.

2. Adjust the hat suspension so that you have about 1¼ inches clearance between the top of your head and the inside shell of the hat. This is for maximum protection of your head from a falling object, as well as for ventilation.

3. Do not drill a hole in the hat. It lessens the impact value. If you wear the hat right, it will be ventilated properly.

4. Do not paint the hat. Paint cuts down resistance to electricity.

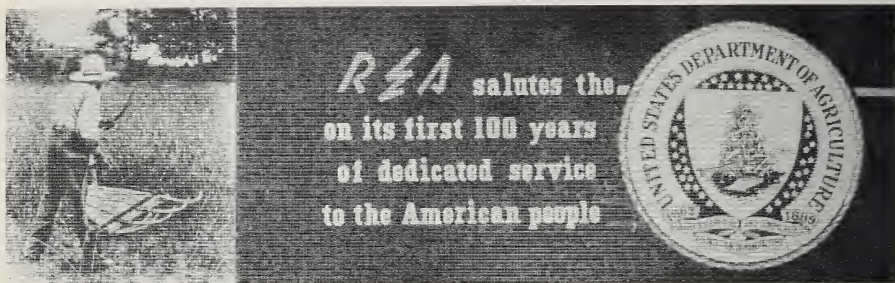
THIS MONTH

- 2 *A Message from the Administrator*
- 3 *SEPA: Experiment in Teamwork*
- 6 *Custer Power District Aids Nebraska 4-H Camp*
- 9 *Industrial Trends in the Midwest*
- 11 *Why Electric Cooperatives Encourage New Industry*
- 12 *Helicopter Sets Poles in Oregon Forest*
- 15 *REA Issues Report On Loans Made In Fiscal Year 1962*
- 16 *New Power Sources Stir Interest*
- 17 *Iowa School Heats Pupils, Not Rooms*
- 18 *New and Revised REA Bulletins*
- 19 *Saga of Scotchman Creek*
- 21 *"Mr. Thorntown"*
- 23 *Effective Safety Promotion*

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OFFICIAL BUSINESS



In 1962 the United States Department of Agriculture observes the Centennial anniversary of its establishment. President Lincoln signed the Act creating the Department on May 15, 1862.

Since then, agriculture has made one of the Nation's most impressive production records. In 1862 one farmer produced food for 5 people. Today he produces enough for 27.

Few people know that farming

- Employs 7.1 million workers—more than the combined employment in transportation, public utilities, the steel industry, and the automobile industry.
- Spends over \$25 billion annually for goods and services to produce crops and livestock; another \$15 billion a year for the same things that city people buy.
- Creates so much employment that 4 out of every 10 jobs in private employment are related to agriculture. For instance, 10 million people have jobs storing, transporting, processing, and merchandising the products of agriculture; 6 million people have jobs providing the supplies farmers use.
- Enables Americans to choose from as many as 5,000 different foods when they go to market.
- Provides the equivalent of about 24 cotton house dresses or 30 dress shirts for every man, woman and child in the Nation.

The United States is the world's largest exporter of agricultural products; 65 million acres of its 321 million harvested acres produce for export. Our food and other farm products are helping to relieve hunger and to promote economic growth in the newly developing countries of the world.

Food costs have risen less in recent years than most other consumer items, with the farmer getting none of this increase.

These accomplishments of American agriculture are the story that the U. S. Department of Agriculture is telling in its Centennial observance.