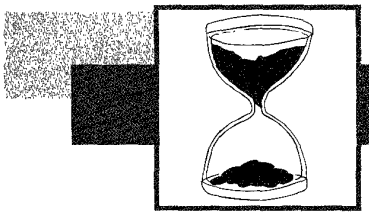


History

Edward L. Owen

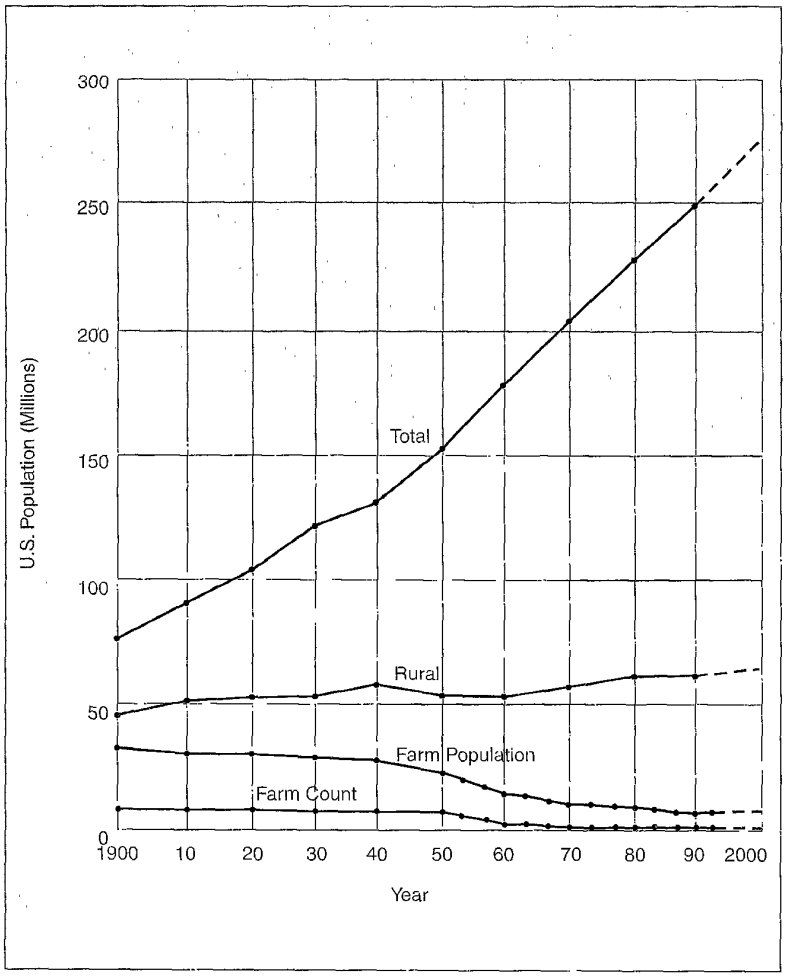
Rural Electrification: The Long Struggle

The electrification of the farm requires the co-operative effort of the farmer, the electric light and power company, and perhaps most of all, the electrical manufacturer. The problem is difficult, but it must be solved. Farms must be made attractive as a place to live, and profitable as a business.

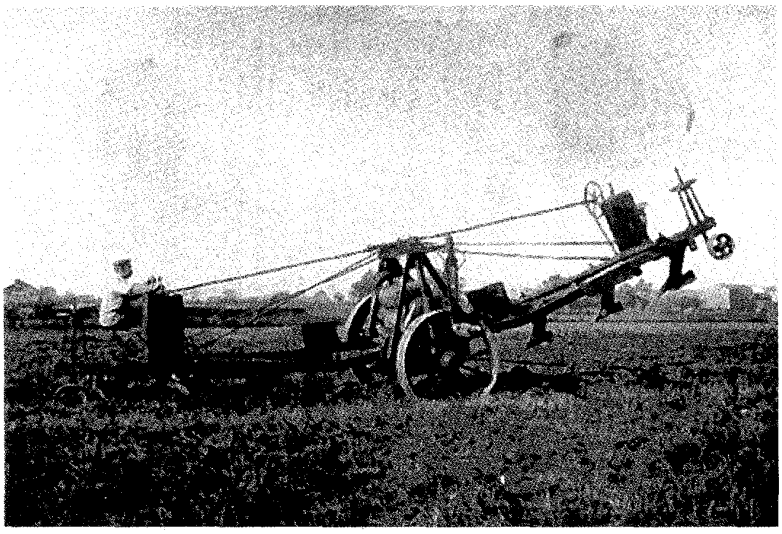
—Owen D. Young (1925)

Bringing the benefits of electricity to farms and rural areas was mostly a dream in the early 20th century. Many obstacles had to be overcome before widespread use of rural electric power became practical. Today, many people in the United States have the mistaken idea that rural electrification suddenly appeared in 1935 when the Rural Electrification Administration (REA) was established by executive order and the Rural Electrification Act of 1936 was subsequently passed. This impression is unfortunate for two reasons. First, it fails to recognize the aspirations and contributions of two full generations of electrical engineers, who worked in the field prior to 1935; and second, it ignores significant progress made in other geographic areas of the world. This month's article explores some of this earlier history, then presents material as prepared by members of the Rural Electric Power Committee (REPC) of the IAS about the history of their committee.

The REPC is an active and fully functioning committee of the IAS. Each year it sponsors the Rural Electric Power Conference. Individual papers prepared for presentation at the conference are bound together and published as a conference record. The REPC has an interest in certain subjects uniquely their own, while other subjects are shared in common with both the Industry Applications and Power Engineering Societies. The work of the REPC tends to focus on the transmission, distribution, and



Farm demographics versus time: 40 years of the IEEE Rural Electric Power Committee, 1955-1995. (Source: U.S. Bureau of Census)



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Electric plow—1900.

utilization of electric power, as found in rural settings.

Historians group rural electrification developments into certain time periods or eras based on organizational or political factors [1-3]:

- 1906-23—Pioneers began to appear on the scene around 1906. They were a diverse group of individual persons, working independently of each other and without cooperative arrangements.
- 1923-35—The Committee on the Relation of Electricity to Agriculture (CREA) was organized in 1923. Electrical manufacturers assumed the lead, following numerous conferences between representatives of the American Farm Bureau Federation and the National Electric Light Association (NELA). Although few specific results are visible today, important groundwork was established to aid in later efforts.
- 1935-55—The REA came into existence in 1935, and leadership transferred from manufacturers to an agency of the U.S. government. Issues on how best to proceed were sharply debated. Public power versus investor-owned electric utilities were the focus.
- 1955-92—By 1955, more than 90% of the farms and ranches in the U.S. finally had electrical service, and the nature of rural electrification work began to mature. The REPC was organized within the AIEE to provide a forum in a learned society for discussion of technical matters. The REA continued to provide low-cost loans to rural electric cooperatives.
- 1992—The Energy Policy Act of 1992 began the process of deregulation to promote more competition in the electric utility industry.

Meanwhile, experience throughout the world was not uniform, but varied widely. Geographic areas outside the U.S. independently started their own rural electrification programs. Some places began earlier than others, made even faster progress, and arrived at solutions to their problems different from those adopted here and elsewhere. Other less advanced countries still have significant portions of their rural areas that are not electrified. Brown identifies several political entities that achieved rural electrification on a significant scale before the REA came into existence. Portions of Germany claimed 60% rural electrification by 1927. France, with 50% rural population, achieved 71% electrification by 1930 by means of heavy subsidies. Other countries identified and the degrees of rural electrification they achieved are Finland, 40%; Denmark, 50%; Czechoslovakia, 70%; New Zealand, 35%; and Canada, 27%. Brown identifies four contributing factors to the advanced state of rural electrification in these countries. These factors are World War I (WW I) draining available fossil-fuel supplies, a surge in agricultural production following WWI, higher population densities, and greater sense of social responsibility by local governments [1].

Brown identifies several factors that he claims affect the rate at which electrification progresses—so-called regional influences. His factors include: type of agricultural activity, population density, government attitude, and cultural factors. He also applies these factors to regional areas of the U.S. to explain why places like the West Coast and New England were faster to electrify rural areas, while the Deep South and Midwest were slower. His analysis shows that by 1930, 60% of the farms and homes in California, Oregon, and Washington were electrified due to irrigation, 40% of rural homes in New England had electric service, while only 3% of those in the South and Midwest were electrified [1].

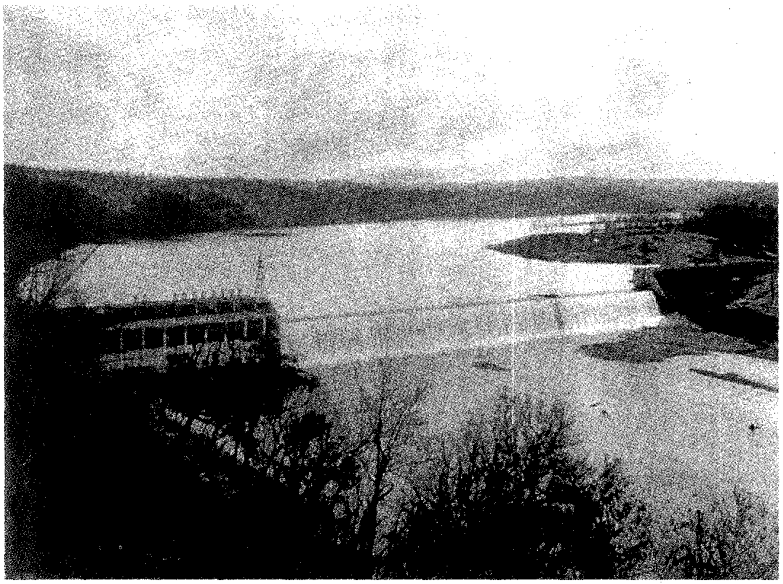
Pioneers

Lemstrom is reputed to be one of the earliest experimenters in electrification applied to agriculture. His work on the influence of artificial electric fields or currents on the growth of plants began in 1885.

Electric traction, applied to mobile farm implements, is technology that was investigated over a long period of time. A major problem, never satisfactorily solved, was conveying electricity from a stationary source of power to mobile farm implements, like plows, cultivators, or harvesters. A variety of solutions were tried, but interference between the electric conductor and the moving electric motor seemed insolvable. In the electric plow photograph, a trailing cable can be seen lying on the ground next to the electric plow. Even today, homeowners using electric mowers to trim their lawns are still concerned about the possibility of cutting any extension cord that brings power to the mower. Improvements to internal combustion engines eventually made gasoline- and diesel-powered tractors the unquestioned way to pull plows and cultivators.

Hydroelectric developments began to occur simultaneous with the develop-

ment of electric power in the 1880s. The development of Portland cement at the turn of the century opened up many new possibilities. Thomas Edison became interested in Portland cement and promoted it for a variety of uses. The locks and dams of the Panama Canal were the first large-scale applications of cement to civil structures. Almost immediately, several large dams were constructed elsewhere using this new material. One of the better known examples is the Keokuk dam and locks on the Mississippi river, located about 125 miles north of St. Louis. Keokuk produced power at 25 Hz and was not economically suitable for farm applications. A less well-known dam, built at the same time as Keokuk, is the Ozark Beach dam at Forsyth, MO. Created in 1913, it impounds the White River to form Lake Taneycomo, located about 7 miles overland from Branson, MO. It was built by Ozark Power and Water Company (now part of Empire District Electric Company) to furnish electric power to surrounding areas, including lead, zinc, and coal mines. It was several years later before local rural areas benefited significantly from the electricity produced at the dam. A major obstacle to immediate use was the high cost of connecting to the 66,000 kV transmission line and the small amounts of power required by farmers. Only those farms close to the smaller cities could take advantage of lower-cost, low-voltage distribution feeders, as used for local distribution. Other hydroelectric dams in the local area were constructed by the Army Corps of Engineers rather than private power companies like Empire [4].



Dam and power house—1913.

CREA Period

One of the more widely publicized research projects in rural electrification of the mid-1920s was the Red Wing experiment in Minnesota. The primary buildings (barns and houses) of 19 family farms were located near a power line owned by the Northern States Power Company. Northern States built a six-mile extension to their line to provide electricity to the farms as a research project. The results were monitored closely and reported in the press.

Engineers and Rural Electrification

Many persons devoted years of their lives to improving life for those living on farms. No less a person than Owen D. Young, chairman of the board of directors of General Electric, took up the cause. The story of Young is the American story of the farm boy who made good. He became an industrial statesman whose heart remained with his home community and who gave his time unstintingly in public service to his state, the nation, and the world. After graduation from Boston University's law course, he joined the Boston Law of-

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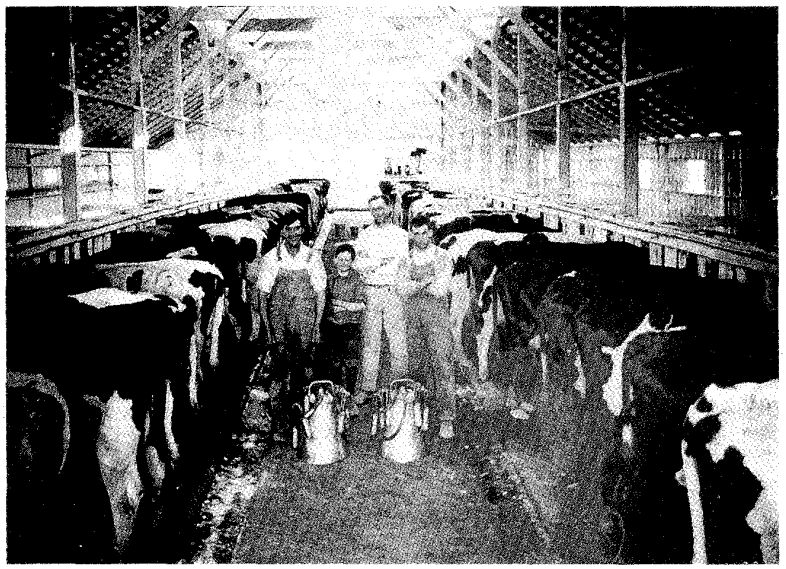
Electrically driven cream separator—1924.

fice of Charles H. Tyler, handling much litigation for the electrical engineering firm of Stone & Webster. He joined General Electric in 1913 as the company's chief counsel and vice president. In 1919, at the request of the U.S. government, he created the Radio Corporation of America, serving as chairman of the board until 1929. In 1922, Young succeeded Charles H. Coffin as chairman of the board of General Electric, while Gerard Swope was appointed president of the company. This team served GE during a period of great expansion, sustained it through one of the country's greatest economic declines, and mobilized it to supply war materials for the Allies in World War II [5].

In 1925, Young put the full force of his personal interest and reputation behind company efforts at farm electrification. Tangible evidence of this is found in many forms; publicity, company-sponsored training of agricultural engineers, design of low-cost rural substations, and gathering of hard data on farm electrification needs [6].

GE announced a new low-cost electric substation in 1929, intended to overcome one part of the high cost of obtaining electric service for farms. Unfortunately, timing of the announcement did not allow demand for the substations to materialize, occurring just months before the stock market crash of that year. GE continued its efforts during the Great Depression, but on a much reduced scale. GE Vice President Charles W. Appleton, made two public addresses over radio station WGY in Schenectady during the 1930s, trying to sustain interest in and hope for farm electrification in a nation paralyzed by economic depression [7, 8].

The low-cost substation developed by GE in 1929 took advantage of recent developments in power system grounding and lightning protection to reliable and inexpensive designs for the function intended. Utility transmission systems were increasingly grounded, and the substation was designed for connection between one conductor of the high-tension line and ground, as increasing numbers of high-voltage lines were operated grounded [9]. Twenty years later, a new problem was recognized—the shock hazard to livestock because of ground currents [10-12]. This illustrates in a small way how the solutions of one era may actually produce problems in a different era. Even today, current literature contains articles on single-conductor earth-return distribution systems as a low-cost answer to rural electric service. Then as now, there is no single solution for all situations; engi-



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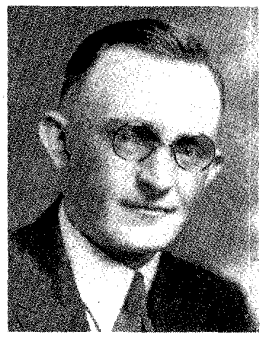
Electric vacuum milking machines—1924

neers must remain competent in their field to make the difficult choices that are the fabric of engineering practice.

J.M. Oliver, the first chairman of the REPC, was an engineer who devoted most of his career to fostering farm electrification. Although the record about him is not complete in all its details, it is known that he worked in the Operating Department of the Alabama Power Company in 1919 [13]. In 1923, he joined the Central Stations Engineering group of General Electric in Schenectady. He retired from the Apparatus Sales Division in 1957, after 35 years of service.

Oliver's work with GE involved farm electrification. He served on the Farm Equipment and Structures Research Advisory Committee for the secretary of agriculture at the time of his retirement [14]. Brown identifies Alabama Power as a pioneer in efforts at farm electrification, and the reader is left to speculate on how Oliver's service with that company may have influenced his subsequent efforts at GE [1]. It is clear that 1923 was the beginning of a new era at GE and that Oliver came into the company during a period of tremendous growth and prosperity. When Owen D. Young and Gerard Swope took leadership, GE began the extensive manufacture of electric appliances for home use. Before 1922, the only product sold directly to the public, on the basis of mass production and wide distribution, was the incandescent electric lamp. Sale of electric fans, ranges, and other household appliances had been through local power companies. Until that time, GE had concentrated its resources on producing equipment for generating, transmitting, and controlling electricity [5]. The pattern of direct sales to consumers was only partially extended to farm electrification, with the bulk of its commercial activities still directed towards local utilities as outlets. Brown identifies the basic problem in obtaining results, during the CREA era, as failure of the electric utilities to solve the issue of cost [1]. Without a doubt, this was a daunting task under then-existing conditions. Farmers, particularly in midwestern and southern states, could buy many more acres of land for the cost charged by utilities to extend electric service to their farms. The utilities wanted to make a profit, and they saw the great expenses involved in extending power lines and installing expensive substations as eroding those profits. This was a political issue, beyond the role of an engineer like Oliver. However, he continued throughout his career to work for farm electrification in the spirit established by Owen D. Young in 1925.



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J.M. Oliver—1919.

Changing Rural Patterns

Changes in the title of the REPC reflect changing population patterns in the U.S. Similar patterns exist elsewhere. In 1900, the terms *rural* and *farm* were nearly synonymous. Today, the farm population is but a small fraction of the rural population. The U.S. Census Bureau provides the most comprehensive and accurate picture available of this ever-changing pattern. The total population is divided into two major segments, urban and rural, based on location of residence. Although definitions have changed through the years, roughly speaking, persons living within an incorporated area of 2,500 persons or more are classified urban and all others are rural. Those persons situated on a parcel of land one acre or larger in size and producing $1,000 or more annually of farm products (current definition) are considered to be farmers. In 1900, the rural population exceeded the urban population by a factor of nearly two to one, and the majority of those rural persons lived on farms. Migration from farm to city was well underway by 1900, and this continued until the 1950s as people sought a better life, partly provided by availability of electricity in urban homes and factories. After World War II, a new pattern emerged—migration from urban centers to surrounding suburban areas. Again, electricity played a key role in this migration as it was now readily available in those areas' surrounding metropolitan centers and could provide the improvements in living conditions that people were seeking.

Committee Sponsorship

The IEEE's IAS Rural Electric Power Committee has operated under different titles and society structures. The first title was the Farm Electrification Subcommittee, which was formed in 1953 under the Domestic and Commercial Applications Committee of the American Institute of Electrical Engineers (AIEE). According to Stedman [15], this subcommittee probably was an out-

growth of the National Rural Electrification Conferences of 1947-48.

In 1959 the name was changed from "Farm" Electrification to "Rural" Electrification Subcommittee, still under the AIEE Domestic and Commercial Applications Committee. This name change was requested because light industry and other customers were being established and rural electrification was not limited to farms. With the formation of the IEEE in 1963, from the merger of AIEE and the IRE (Institute of Radio Engineers), the Rural Electrification Subcommittee remained under the Domestic and Commercial Application Group. Full committee status was obtained in 1965 as the "Rural Electrification Committee" of the Industry and General Applications Group. The present-day title "Rural Electric Power Committee" was approved in 1971 to better describe the scope of the committee. The committee and conference emphasis was changing from providing electric power to maintaining and improving the existing electrical systems. This name change in 1971 came from the committee's request at its 1970 meeting.

Since 1971, IEEE has reorganized and renamed its subgroups, while the Rural Electric Power Committee has remained unchanged. Today the Rural Electric Power Committee is in the Industrial and Commercial Power Systems (I&CPS) Department of the Industry Applications Society (IAS). I&CPS conferences have typically been at the same time or the week following the REPC Conference. As a result, contacts with that Department have been minimal. Written reports are more common than participation by REPC members. All other committees of the I&CPS Department meet at I&CPS conferences.

Committee membership is drawn from investor-owned utilities, rural electric cooperatives, public utilities, apparatus manufacturers, equipment manufacturers, software developers, universities, colleges, and government. A review of the past chairmen and their employers listed in Table 1 shows the wide background of leadership and the diversity of membership on the committee. In the first 10 years of the committee's existence, the chairmanship was shared by five members. Since 1964 there has been a change of chairmanship every year except 1991. In that year the elected chairman resigned and past chairman Alan Blackmon served again to maintain the experience needed to conduct a major conference. Employers or agencies who have supported a chairman for more than one year are General Electric, four years; Illinois Power, Southern Engineering and Rural Electrification Administration, three years, and Agricultural Research Service, two years.

Conferences

The 1998 IEEE Rural Electric Power Conference (REPC) is at least the 42nd meeting of this body. The first conference after World War II was an AIEE Conference in 1955 at the Morrison Hotel in Chicago, Ill. A speaker in 1955 alluded to an AIEE Farm Conference in 1942, so there may have been several meetings before 1955. However, the historical records of the REPC have conference dates only from 1955 and beyond.

Conferences held since 1955 are listed in Table 2. There are 43 conferences listed; however, there are no records from the 1962 meeting in Detroit—only a meeting notice in the AIEE magazine *Electrical Engineering*. It is probable that the 1962 meeting was

Table 1. Chairmen of the Rural Electric Power Committee Since 1953; Also Listed is the Chairman's Employer, Who Provided Valuable Support

Year	Chairman	Employer
1953	J.M. Oliver	General Electric Co.
1954	J.M. Oliver	General Electric Co.
1955	J.M. Oliver	General Electric Co.
1956	J.M. Oliver	General Electric Co.
1957	H.W. Kelley	Rural Electrification Administration, USDA
1958	H.W. Kelley	Rural Electrification Administration, USDA
1959	?	?
1960	W.H. Ridout	Electricity of the Farm
1961	H.T. Smith	Kentucky Rural Electric Corp.
1962	?	?
1963	C.C. Ambrosius	Illinois Power Company
1964	C.C. Ambrosius	Illinois Power Company
1965	H.J. Williams	Public Service of Colorado
1966	F.C. Miramontes	Pacific Gas and Electric Co.
1967	G.T. Sutton	Texas Power and Light
1968	Jack K. Hicks	Linn County Rural Electric Coop
1969	William E. Triplett	Pacific Power and Light
1970	K.R. Brown	Brown Engineering Co.
1971	J.A. Fussell	Fussell Engineering
1972	Lowell E. Griffith	Illinois Power Co.
1973	Leo H. Soderholm	Agricultural Research Service, USDA
1974	Paul E. Phaneuf	Panhandle Rural Electric Mem. Assoc.
1975	Blair Ross	American Electric Power
1976	Joseph E. Mayes	Southern Engineering Co.
1977	Ralph E. Naslund	Norris Public Power
1978	Peter B. Lee	Ulteig Engineers Inc.
1979	Donald L. Hinkle	Finley Engineering Co.
1980	Dennis R. Eicher	Power Systems Engineering Inc.
1981	Thomas B. Cresswell	Patterson & Dewar Engineers Inc.
1982	John D. Keig	Stanley Consultants Inc.
1983	John Soper	Southern Engineering Co.
1984	John A. Zelenak	Detroit Edison Co.
1985	Claude M. Hertz	Ronk Electric Industries
1986	W.T. "Chip" Nelson	Cobb Electric Membership Corp.
1987	Steven E. Collier	C.H. Guernsey & Co.
1988	James C. Dedmon	Rural Electrification Admin., USDA
1989	Wayne Carr	MILSOFT Integrated Solutions
1990	Alan Blackmon	Blue Ridge Electric Cooperative Inc.
1991	Alan Blackmon	Blue Ridge Electric Cooperative Inc.
1992	Robert C. Dew Jr.	Southern Engineering Co.
1993	LaVerne E. Stetson	Agricultural Research Service, USDA
1994	Don Werner	Omaha Public Power District
1995	Greg Woodsmall	Northern Virginia Electric Cooperative
1996	Ken Farmer	Beauregard Electric Cooperative Inc.
1997	Brad Schmidt	Cass County Electric Cooperative Inc.
1998	Don Cobb	Union Electric Company

scheduled and canceled. The 1963 meeting program was labeled the seventh annual meeting. Meetings have been held every year since 1963.

The earlier conferences were held in the fall. Since 1960 all of the conferences have been held in late April or early May. Early conferences were scheduled a year in advance. Today's conference requires scheduling two, three, or more years ahead in order to obtain the appropriate facilities at the traditional time period. On several occasions the chairman has scheduled the annual conference near his home to facilitate the conference coordination. The conference has been in many areas of the U.S. east of the Rockies. Cities that have hosted the conference twice are Colorado Springs, Denver, Kansas City, Louisville, Nashville, Omaha, and Springfield. Atlanta and New Orleans have hosted the Conference three times. With the 1997 Conference in Minneapolis, the conference was held there five times.

Conference Programs

Early programs were consumer oriented and directed toward power requirements, safety, trends in agriculture affecting power use, and equipment applications. New equipment and technologies to reduce labor, increase productivity, and save time were also common topics.

In the second decade, rural load growth resulted in presentations on flicker problems from motor starts and studies on higher voltage distribution systems and continued with new technologies and applications of electric power. Farm voltages of 240 or 480 volts were proposed.

In the '70s many consumers had moved to the country. Subdivisions and rural industries that followed brought programs on underground distribution systems, alternative power supplies, and reliability concerns. Papers on load management, load control, cost allocation, and rates were a stable part of each program.

Computer applications began to appear regularly on programs in the '80s. The ready availability and cost reductions of computer equipment brought blessings and curses. The blessings were better records, forecasts, modeling, and greater detail and accuracy of

calculations. The curses were power quality, voltage spikes, power interruptions, and others that brought new problems to be analyzed and corrected. Computers and software exhibits became a regular part of the program. Corrosion and "treeing" of underground conductors were regular topics.

Program topics in the '90s have continued with power quality issues, diversification of the rural power industry, and new GIS and GPS applications. In every meeting program there have been papers on experiences of the presenter in solving everyday problems of the rural electric industry.

The strength of the programs have been that topics have mirrored the interests and concerns of those who attended. As society and problems have changed, the programs have reflected those concerns and changes. Reviewing programs over the years is a review of rural electric history. Measured by the number of papers that have been subsequently published in the IAS Transactions, an evaluation would be low. However, when measured by meeting attendance, the conference has a long record of being highly popular and very practical.

Program Participants

A review of past programs shows that programs and speakers have come from all segments that have a concern for rural electric facilities. Speakers have represented the following industries or organizations.

- engineers, line superintendents, and operators of rural distribution and power supply systems
- engineering consultants to electric power systems in planning, design, maintenance, and problem-solving
- equipment manufacturers—General Electric, Joslyn, Cooper, Westinghouse, McGraw Edison, Allis Chalmers, Siemens Allis
- allied equipment manufactures—conductors, meters, switches, cables, capacitors, etc.
- utilization equipment suppliers—motor, pumps, dryers, phase converters, and heating and cooling equipment
- software developers and distributors to provide bookkeeping, maps, and system data

- university educators and researchers with interest and projects related to rural electric applications and the rural economy
- government—Rural Electrification Administration and Agricultural Research Service, both in the U.S. Department of Agriculture, and other agencies

A scan of the committee chairmen in Table 1 identifies many authors of program papers and their employers. Many of the chairmen first presented papers and then become active in the committee. Each of the chairmen were instrumental in keeping both the activities of the committee and the conference viable and in tune with issues of the day. Previous historical papers have described the special efforts of the earlier chairmen and other authors and promoters of the rural power cause [15-16]. All who have served as chairmen and retired, or are still active, have made special impacts, and yet each was followed by capable successors.

Over the years several authors have repeated as presenters, with several having presented two, three, or even four papers on related, but sometimes different subjects. The USDA participants have presented the greatest number of papers and four individuals in particular have been regular contributors. Orvile Zastrow of the Rural Electrification Administration (REA) contributed nine papers. From Agriculture Research Service, Landy Altman has contributed seven; and LaVerne Stetson and Leo Soderholm 12 papers each.

In the '50s and '60s a Best Paper Award of $100 was presented to encourage and attract authors. This practice was discontinued in 1970. In 1995, the Committee initiated procedures for selecting an award for the best paper. In addition, the paper review committee selects papers to be forwarded for further review for publishing in IAS Transactions.

Committee Purpose and Activities

The annual conference serves as the annual meeting of the Rural Electric Power Committee. Subcommittees carry on their work throughout the year and report at the committee meeting. Subcommittees are directed, formed, or discharged. Many subcommittees are re-

Table 2. Meeting Dates and Locations of the Rural Electric Power Conference Since 1955

Number	Year and Dates	Location
1	1955 March 8-10	Morrison Hotel, Chicago, Ill.
2	1956 October 29-31	Peabody Hotel, Memphis, Tenn.
3	1957 October 29-31	Nicollet Hotel, Minneapolis, Minn.
4	1958 October 20-24	Jung Hotel, New Orleans, La.
5	1960 May 10-12	Sheraton-Fontenelle Hotel, Omaha, Neb.
6	1961 May 1-3	Kentucky Hotel, Louisville, Ky.
7	1962 April 17-19	?, Detroit, Mich.
8	1963 April 22-24	Hotel Leland, Springfield, Ill.
9	1964 April 13-15	Brown Palace, Denver, Colo.
10	1965 May 24-25	St. Francis Hotel, San Francisco, Calif.
11	1966 May 12-13	Sheraton-Dallas, Dallas, Texas
12	1967 May 1-2	Roosevelt Hotel, Cedar Rapids, Iowa
13	1968 April 29-30	American Motor Hotel, Atlanta, Ga.
14	1969 April 28-29	Jung Hotel, New Orleans, La.
15	1970 April 27-28	Neil House, Columbus, Ohio
16	1971 April 26-27	Cosmopolitan Hotel, Denver, Colo.
17	1972 April 24-25	Bel Air East, St. Louis, Mo.
18	1973 April 30-May 1	Radisson Hotel South, Minneapolis, Minn.
19	1974 April 29-30	Galt House, Louisville, Ky.
20	1975 April 27-29	Hilton Hotel, Omaha, Neb.
21	1976 April 25-27	The Atlanta Hilton, Atlanta, Ga.
22	1977 May 15-17	Crown Center Hotel, Kansas City, Mo.
23	1978 April 30, May 1-2	Downtown Hotel, Minneapolis, Minn.
24	1979 April 22-24	Sheraton West Hotel, Indianapolis, Ind.
25	1980 April 27-29	Howard Johnson's, Rapid City, S.D.
26	1981 April 26-28	Omni International Hotel, Atlanta, Ga.
27	1982 April 25-27	Lincoln Plaza Inn, Oklahoma City, Okla.
28	1983 April 24-26	Hotel Fort Des Moines, Des Moines, Iowa
29	1984 May 6-8	Radisson Plaza Nashville, Nashville, Tenn.
30	1985 April 28-30	Holiday Inn East, Springfield, Ill.
31	1986 April 20-22	Sheraton Charleston Hotel, Charleston, S.C.
32	1987 May 3-5	St. Antohony Inter-Continental, San Antonio, Texas
33	1988 May 1-3	Myatt Regency Lexington Hotel, Lexington, Ky.
34	1989 April 30, May 1-2	Clarion Hotel, Colorado Springs, Colo.
35	1990 April 29-30, May 1	Sheraton Hotel, Orlando, Fla.
36	1991 April 28-30	Hyatt, Dearborn, Mich.
37	1992 May 3-5	Clarion Hotel, New Orleans, La.
38	1993 April 25-27	Allis Plaza, Kansas City, Mo.
39	1994 April 24-26	Sheraton, Colorado Springs, Colo.
30	1995 April 30, May 1-2	Sheraton, Nashville, Tenn.
41	1996 April 28-30	Radisson Plaza, Fort Worth, Texas
42	1997 April 20-22	Hilton towers, Minneapolis, Minn.
43	1998 April 26-28	Regal Riverfront, St. Louis, Mo.

lated to the annual conference, which is the major activity of the committee.

For several years the conference program has had a paragraph succinctly stating the purpose of the conference. It reads as follows: "This conference is intended to provide information on the planning, design construction, operation and analysis of electrical distribution systems. Special emphasis is given to the special problems and requirements of rural electric distribution." The conference provides a forum for engineering and technical personnel, power suppliers, equipment manufacturers and university, college, and government representatives to meet and discuss problems and exchange solutions to rural power concerns. It is a valuable resource for those involved with rural electric power issues.

In addition to the annual conference, subcommittees maintain other liaisons through the Standards, National Electrical Safety Code (NESC), Job Training and Safety, Computer and Analytical Methods, and Power Quality/Efficient Electric Use Subcommittees.

Some members of the NESC Subcommittee are on working groups of the NESC. Increased clearances for power lines near grain bins was a long effort that culminated in Article 234 section F of the 1990 NESC. Other NESC issues of concern can be focused through the actions of this subcommittee.

Input to several articles in the National Electrical Code (NEC) have come through the Standards Committee. The last major change was inclusion of rules for installing phase converters in the 1990 NEC.

The Awards Committee recognizes, in a timely fashion, the services and accomplishments of committee members and others for their service to the REPC activities and to IEEE. The Historic Subcommittee preserves committee records. Jack Hicks deserves special recognition for his long and untiring efforts to assemble and summarize committee activities.

Conclusion

The Rural Electric Power Committee has a long history of providing sound, usable technical information for rural power concerns through annual conferences and subcommittee activities. Many individuals and their employers have contributed to this long-term success. They all deserve our thanks.

The committee interfaces with other activities of the IEEE and other technical groups. These contacts continue to be strengthened and widened. We look forward to seeing a 50-year report of committee activities in 2006.

Acknowledgment

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For More Information

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