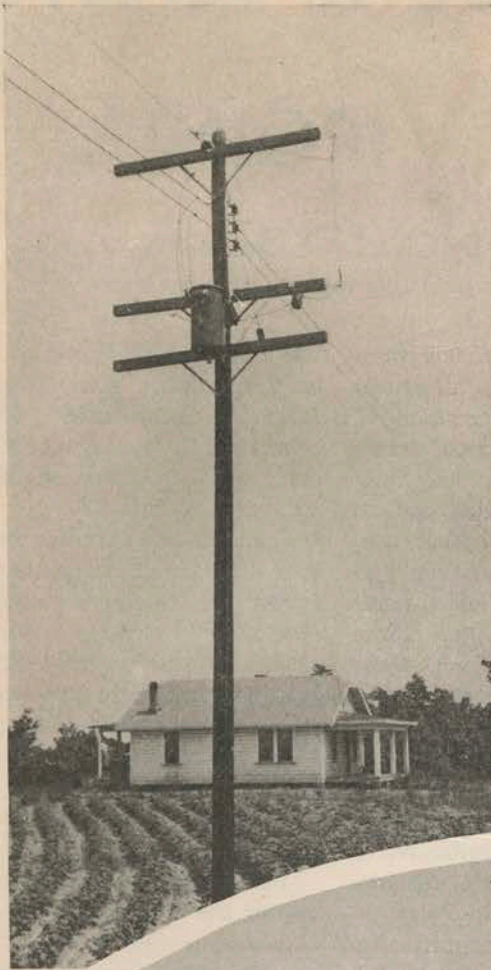


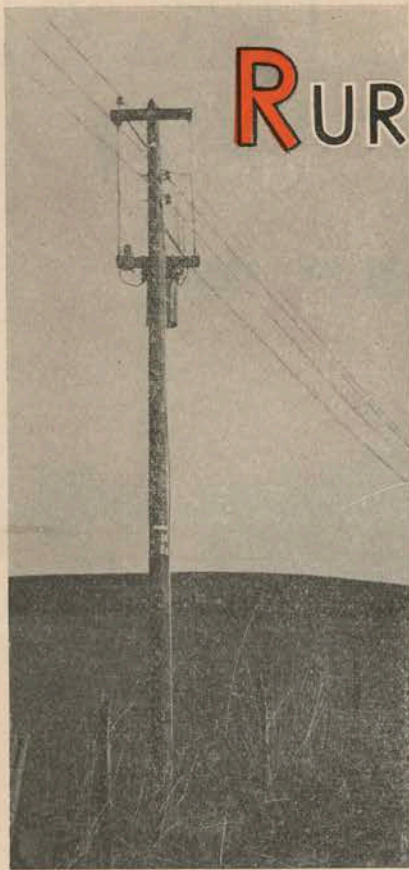
ELECTRICAL SOUTH

MAY, 1936



WITH more than seven thousand miles of rural distribution lines to be constructed in the South this year, to serve approximately forty thousand new customers, there is opened in this territory a tremendous potential market for wiring materials and devices and current consuming appliances of all kinds. Rural communities have become electricity conscious during the past two or three years, and are in a receptive mood. Dealers who "follow the rural lines" with aggressive sales efforts will find a steadily increasing market for electrical equipment and devices of all kinds





RURAL ELECTRIFICATION IN VIRGINIA

By Charles E. Seitz
Virginia Polytechnic Institute

ers, of whom at least 15,000 were farmers. Virginia leads all southern states, with the exception of Florida, in the percentage of farms served by electric companies. Only eleven states in the union had an average annual kilowatt hour consumption per farm larger than Virginia, and farm irrigation is practiced extensively in these eleven states, which accounts for their high farm consumption of electric energy.

THE cooperative effort on the part of state officials, agricultural organizations and utilities, in promoting the development of rural electrification in Virginia, has resulted in an increase of more than one thousand per cent in the miles of rural electric lines built in the state in the last decade.

In 1924 there were approximately 500 miles of rural electric lines throughout the state, serving about 1,500 rural customers. By the end of 1935 more than 6,000 miles of rural lines were in operation, serving 45,000 rural custom-

Much of this progress can be traced directly to the rural electrification program started in 1924. In that year, through the initiative of the agricultural engineering department of the Virginia Polytechnic Institute, a state committee on the "Relation of Electricity to Agriculture" was organized. This committee consisted of representatives from the leading agricultural organizations, utility companies, and interested state agencies. The committee initiated an investigation of the possibilities of extending electric service to farms in the state, and sponsored the construction of an experimental rural elec-

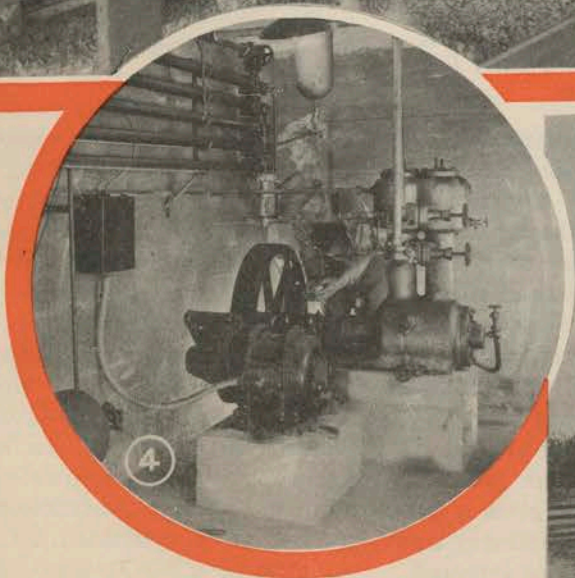
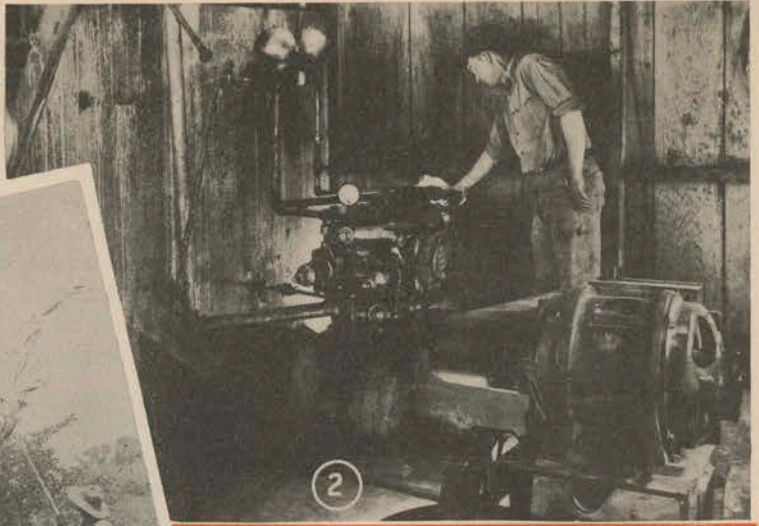
tric line near Richmond. A number of electric equipment manufacturers cooperated with the committee by loaning electric equipment for installation on the farms connected to this line.

Comprehensive studies were made over a period of two years on these farms to determine the most profitable uses of electric service. The results obtained on this experimental line convinced the committee that rural electrification was practical over a large area of the state, and indicated the need for a statewide program of rural electrification.

The committee recognized that two of the most important steps in obtaining a wide extension of rural electric service in the state were the education of the farm people as to the advantages of electricity, and the continuation of research studies to develop profitable uses of electricity on the farm. The agricultural engineering department at V. P. I. was designated as the agency best prepared to continue the educational and research program. The committee, therefore,

Rural Electrification Progress of the Virginia Electric and Power Company

Year	Kwh	Revenue	Ave. Rate c per Kwh	Ave. No. of Customers	Ave. Annual Rev. per Cust.	Ave. Annual Kwh per Cust.
1929	903,866	\$ 59,952	6.63c	903	\$66.39	1,001
1930	1,363,587	74,546	5.46c	1,200	62.12	1,136
1931	2,516,108	106,664	4.23c	1,497	71.25	1,681
1932	3,260,701	128,910	3.95c	1,621	79.52	2,012
1933	3,421,571	131,119	3.83c	1,657	79.13	2,065
1934	4,093,766	138,141	3.37c	1,805	76.53	2,268
1935	4,610,297	137,485	2.98c	1,831	75.09	2,518



SHOWN here are several applications of electricity on Virginia farms:

(1) Spraying from a stationary spray plant in an orchard near Wytheville, Virginia. This method saves much time, labor and expense over the portable spraying method.

(2) This 15 hp portable motor operates the stationary spraying plant and a hammer mill.

(3) These homemade electric brooders, on a Virginia farm, have been giving complete satisfaction and are less costly than some other types.

(4) Ammonia compressor operated by a 7½ hp motor, for refrigerating a fruit storage house on a farm near Wytheville, Virginia.

(5) Cold storage and packing house on a Virginia farm. The cold storage room has a capacity of 5,000 bushels. Second floor is used as a packing plant.

turned over the promotional and research program to the agricultural engineering department and decided that its original objective, the initiation of a rural electrification program, was completed. The committee was dissolved and the agricultural engineering department assumed the duties of promoting the program formulated by this early committee.

The first major objective of the educational program was to convince the utility executives of the importance of developing and extending their rural service as rapidly as possible. The two largest electric companies cooperated splendidly, and employed trained agricultural engineers to assist the farmers, and to cooperate with the state agricultural extension service in the application of the educational program. I am convinced that the efforts of these agricultural engineers were responsible for much of the progress in rural electrification achieved by these companies.

One of the serious obstacles preventing a more rapid expansion of rural service was the lack of a uniform policy on the part of the electric companies in making rural line extensions. In order to obtain service, the farmer was required to advance the money for the construction of the lines, and to pay a relatively high rate for the service supplied. In order to improve this situation, and to develop a uniform rural line extension plan, Governor Byrd called a meeting in 1929 of the various groups interested in the extension of electric service to the farms.

At this meeting the governor appointed a committee composed of representatives of the state college, the agricultural organizations, the state corporation commission, and the electric utilities. This committee, after considerable study, recommended a uniform plan under which electric companies would finance the construction of rural lines anywhere in their territory, to serve any individual or group of farmers, at rates applying in the cities or towns from which the extensions were built. The plan included a provision that the company would be guaranteed a month-

ly revenue, or rental, based on a percentage of the construction cost of the line. This plan was adopted by power companies supplying over 90 per cent of the electricity used in Virginia. The adoption of this uniform rural line extension policy resulted in increased construction of rural lines and removed one of the major obstacles to an effective educational program.

After the establishment of the



The type of construction shown here has reduced line costs and has made many rural line extensions possible

National Rural Electrification Administration as an emergency agency, with funds available for loans to states for the construction of rural electric lines, the Virginia State Corporation Commission employed a firm of consulting engineers to make a preliminary survey of the possibilities of building additional rural lines throughout the state with Federal aid.

This survey, though completed within a few weeks, gives a good background for a preliminary analysis of the results to be expected.

The survey indicated that 2,475 miles of rural lines could be con-

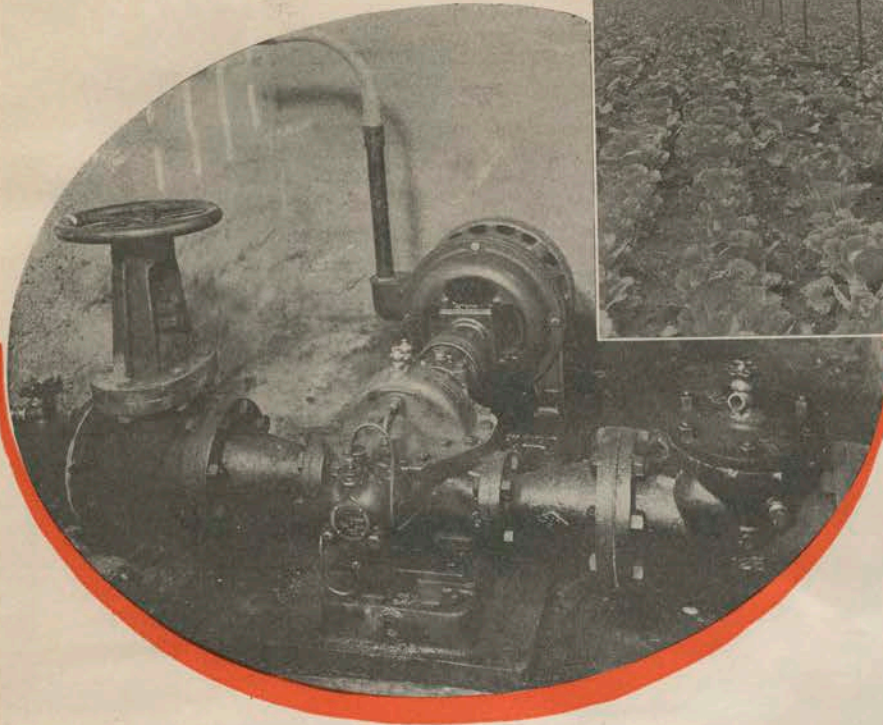
structed to serve 16,187 customers, a density of one customer for each .24 miles of line. The estimated cost of these lines was \$3,349,422. The revenue from this group of lines was estimated at \$320,860 per year, representing a gross return of 9.6 per cent on the required investment. The survey also indicated that there were additional extensions, totaling 3,467 miles, which would reach 15,200 customers, a density of one customer for each .23 miles of line. The construction cost of these extensions was estimated at \$4,502,644. The annual revenue from these lines was estimated at \$472,115, or a gross return of approximately 10.5 per cent on the investment.

At the request of the Rural Electrification Administration, meetings were conducted by the county agents in 51 counties during 1935, all of which were attended by the extension agricultural engineer from the state college. At these meetings the R. E. A. plan was explained and the farmers were advised of the proper methods of preparing rural line projects for submission to the R. E. A. Over 1000 miles of proposed rural lines were surveyed by this means and developed as R. E. A. projects. A number of the lines surveyed have already been constructed, or are under construction now by the utility companies.

One cooperative rural line company was formed—the Farmers' Rural Utilities, Incorporated. The R. E. A. allotted \$366,000 to this cooperative company for the construction of 406 miles of rural lines to serve 1,200 farms in several counties. The Virginia Electric and Power Company agreed to wholesale electric power to this cooperative company, which will retail the energy at the same rates available to the customers of the Virginia Electric and Power Company.

Last December at a meeting called by the State Corporation Commission, several of the larger electric companies reduced their minimum revenue guarantee to 1.5 per cent of the construction cost of the lines, effective January 1, 1936. The electric companies estimate that this lower guarantee will en-

The 15 hp motor and pump shown below furnish water for the irrigation system at the right, a thirty-acre truck farm near Hollins, Virginia



able them to build approximately 2,400 miles of rural lines in the next two years, to serve 10,000 additional customers. The reduction of the guarantee has stimulated activity in rural line construction to such an extent that most of the companies report that at present they cannot meet the demand for rural extensions.

The 1936 Virginia General Assembly passed an act sponsored by the Agricultural Conference Board of Virginia which will facilitate the organization and development of rural electric cooperative companies. Early in April at a conference of utility and farm representatives, called by the State Corporation Commission, the utility representatives pledged their cooperation to the farm leaders in the development of rural electric cooperative companies in areas not now adequately served by the private companies. The utility representatives indicated their willingness to wholesale power to any rural cooperative company organized under the new law, which becomes effective in June.

The State Corporation Commis-

sion has appointed a committee consisting of five representatives from the farm interests and five from the private utilities to work out details as to methods of procedure under this new rural cooperative law. Several cooperative companies have already been organized, in anticipation of the new act. The farm groups believe that this new act, together with the greatly increased activity of the private companies, will result in extending electric service to a large percentage of Virginia farms within the next few years.

It is obvious, after twelve years of observation, that education and research are of the greatest importance in extending rural electrification. Since the initiation of this movement in Virginia in 1924, the agricultural engineering department of V. P. I. has been conducting research and extension work in rural electrification, and training agricultural engineers for employment in this field. For several years special courses in rural electrification have been required of all students registered in the agricultural engineering curriculum. A

number of graduates are now engaged in rural electrification work with private utilities, the T. V. A., and state colleges.

The two largest utilities in Virginia have a number of agricultural engineers occupied with educational and promotional work directed toward their farm customers. These men are particularly adapted to this work because they were reared on farms and understand the farmers' problems. Wherever these men are employed, the public relations of the company, especially with the rural people, have been greatly improved, and substantial results in load building have been produced.

The Virginia Electric and Power Company offers a splendid example of what may be accomplished in rural electrification through a well organized program of rural service work, reasonable rates, and the use of trained agricultural engineers.

In 1929 when this company started its rural service program and employed its first agricultural engineer, it had 860 farm customers, consuming an average of 1,000 kwh per year per customer. At the end of 1935 the farm customers had increased to 1,837, with an average annual consumption of 2,518 kwh. The total miles of rural line increased from 709 to 1,658 and the total number of rural customers, including farmers, from 6,162 to 12,887. This accomplishment is shown in detail in the accompanying tabulation.

(Continued on page 48)

Rural Electrification in Virginia

(Continued from page 23)

The reasonable rural rate which this company has in effect is recognized as one of the principal factors responsible for this achievement. However, the agricultural engineers have also played an important part in this development. The winning of the Martin Award by this company in 1933, for outstanding progress in rural electrification, is largely attributed by the officials of the company to the splendid work of the agricultural engineers.

Yet I feel that the surface has scarcely been "scratched," so to speak, in the field of rural electrification. Never was there a more attractive market for the sale of electrical equipment of all kinds, as even the farmers now having electric service are using only a small fraction of the available service. Intensive educational work is necessary to develop this use to a maximum.

The agricultural engineering department of Virginia Polytechnic Institute will render all possible service to all agencies in this educational work. A new rural electrification laboratory, now under construction at the college, will be completed in July, 1936. It is expected that this laboratory will be equipped with electrical farm equipment of all kinds; research studies will be conducted on new uses of electricity in agriculture; and, in addition, it will serve as a laboratory for class work and short courses in rural electrification.

F. C. Taylor Heads El Paso Production Department . .

F. C. Taylor has been promoted to superintendent of production in charge of operation, maintenance and inspection of power stations. Diesel stations and substations of El Paso Electric Company, according to an announcement from E. H. Wills, general superintendent. Supervision of substations will include all customer, distribution and transmission substations, except pole top transformer installations and underground transformer vaults.



Meter pole and distribution center on a dairy barn in Virginia. There are many advantages and economies in this type of meter installation.

Mr. Taylor has been connected with the Stone and Webster organization for many years, and has had a wide experience both with operating companies and on construction work. He was transferred to El Paso last year, from Scottsbluff, Neb.

SEMR Club Plans to Hold an Entertainment

The regular "first Friday in the month" meeting of the Southeastern Electrical Manufacturers' Representatives Club, held on April 5, drew the largest attendance of any meeting held by the organization. The membership committee has been active, and several new members were enrolled.

Guest speaker at the luncheon was Jimmie Burns, sports writer for the Atlanta Georgian. Mr. Burns had been in training camp with the Atlanta "Crackers," and made a most interesting talk on the outlook for the Southern League this year and on the prospects for the Crackers, giving a brief outline of each member of the team and what he may be expected to accomplish this season.

Following the award of attendance prizes, a committee was appointed to arrange for an entertainment. Carl Hausman was appointed permanent chairman of the entertainment committee. Opinions varied as to what form of entertainment would be most suitable, and it may be that the committee will arrange a combi-

nation of outing and barbecue, with golf and dancing in the evening. It is expected the entertainment will be held early in May.

G. A. Jernigan Transferred to El Paso

G. A. Jernigan, formerly superintendent of Gulf States Utilities Company, at Lake Charles, La., has been transferred to El Paso as superintendent of distribution of El Paso Electric Company. Mr. Jernigan has been with Stone and Webster since 1913, starting in with the organization at Port Arthur, Texas, and, in 1915, becoming superintendent of distribution. In 1927 he was transferred to Lake Charles as superintendent of transmission and distribution.

J. A. Reich, formerly connected with Virginia Electric and Power Company, has been appointed assistant chief engineer of the El Paso Electric Company. Mr. Reich was connected with the company eleven years ago, and during the past seven years has been with the Virginia company.

Harville Named District Manager for Louisiana Power and Light . .

N. A. Harville, for several years assistant manager and in charge of the Delhi district office of the Louisiana Power and Light Company, has been promoted to manager. L. C. Preston, former manager of the Delhi and Lake Providence districts, will remain in charge of the Lake Providence section.