OBJECT: 
(1) To demonstrate the most practical methods of securing running water and other conveniences in the farm home.

(2) To improve the sanitary conditions around the home and thereby help the health of the whole family.

As the ultimate object of Extension work is to improve the farm home life, this project should be the most important in Extension work.

IMPORTANCE: According to the best figures available, only approximately 10,000 of the 132,242 farms in the State have running water in the home. The lack of water and other conveniences entails great hardships on the farm women. By installing inexpensive water and sewage disposal systems, the women can be relieved of a lot of drudgery and the health and happiness of the whole family improved. Good health is fundamental to progress in all activities.

PROCEDURE: Promote the project in the county by means of meetings, demonstrations, bulletins, newspaper articles and other publicity means. As this project deals directly with the farm home, it should be handled by the home demonstration agent where one is available.

The Agricultural Engineering Department Will:

(1) Furnish the agent with instructions on methods of handling this project; supply bulletins, plans, etc. for distribution on water supply, sanitation and home conveniences; furnish educational publicity material for use in the county papers.

(2) Send an engineer to the county to visit the farm homes and advise on the most practical water system, sewage disposal system of other home conveniences; give an estimate of the cost of installing such conveniences and advise where equipment can be secured, etc.

The County Home Demonstration Agent Will:

(1) Promote the project in the county by distributing the publicity material, etc., furnished by the Department.

(2) Select a number of farm wives who are interested in getting home conveniences; arrange for the engineer to visit these homes (Several visits can be made in one day).

(3) Obtain a record of the results gotten in the county due to the work of the project.

RESULTS: Results will be measured by number of water systems, sewage disposal plants, conveniences, etc. installed in the county.
AGRICULTURAL ENGINEERING - 1926

SUB-PROJECT II - TERRACING DEMONSTRATIONS

OBJECT:
1. To demonstrate the method of preventing soil erosion by the use of the broad base, or magnum, terrace.

IMPORTANCE:
Soil erosion occurs to some extent in every county of the State and in some counties it constitutes a very serious problem. Soil erosion results in a tremendous loss of fertility as well as the soil itself. It not checked in time, it will necessitate the ultimate abandonment of the land.

In twelve of the Southern Piedmont counties, erosion occurs extensively on about 10% of the farm land, or on 300,000 acres. The value of terracing improvements can be figured at from $5.00 to $50.00 per acre. Figuring conservatively at $10.00 per acre, the value of the project could be estimated at $3,000,000.00 in these twelve counties.

PROCEDURE:
Promote terracing through demonstrations, meetings, bulletins and other publicity methods.

The Agricultural Engineering Department Will:
1. Furnish county agents with educational publicity material for use in their local papers, supply bulletins and other material on terracing for distribution; furnish agents with complete instructions on methods of handling projects.

2. Send an engineer to the county to assist the agent in making surveys for and laying off terracing systems; construct one model terrace on each farm laid off; instruct interested persons in the use of the level in laying off terraces; give talks at meetings.

The County Agent Will:
1. Promote the project in his county by distributing the publicity material, etc. furnished by the department.

2. Select reliable farmers in different communities who have land in need of terracing, and who agree to follow instructions.

3. Make all the necessary arrangements for holding the terracing demonstrations, such as having terrace drags ready, advertise the demonstrations, arrange for at least three demonstrations, one each day.

4. Obtain a record of the results gotten in his county due to the work of this project.

RESULTS:
Results will be measured by number of feet of terraces laid out and constructed; number of acres terraced; number of farmers attending demonstrations; spread of influence, etc.
OBJECT: (1) To demonstrate the use and value of modern farm buildings.

(2) To demonstrate the value of proper arrangement of buildings, fields, etc., so as to conserve labor.

IMPORTANCE: The farmers of the State have $260,000,000.00 invested in farm buildings, or more than the combined value of implements and livestock. Thousands of dollars are spent annually by farmers for new buildings. In most cases, these buildings are constructed without plans and the farmer often finds, after he has finished the building, that it is not what he wanted. By using a good plan, he can usually save money and get a building suitable to his needs.

PROCEDURE: Promote better buildings through the distribution of standard building plans, bulletins, etc.

The Agricultural Engineering Department Will:

(1) Furnish the agent with educational publicity matter for use in local papers; supply bulletins on farm buildings, concrete construction, etc.

(2) Furnish the agent with blueprints, specifications and bills of material for any farm building needed by any of his farmers; prepare new plans when requests cannot be filled from plans on hand.

(3) In cases of community buildings, such as packing houses, county fair buildings, etc., send an engineer to the county to lay off the grounds, buildings, etc.

(4) Answer all requests for information on the farmers' building construction problems.

The County Agent Will:

(1) Promote the project in his county by distributing the publicity material, etc. furnished by the Department.

(2) Select farmers who intend to build and send to the department for plans and other information relating to the proper construction of the structure in question.

(3) Obtain a record of the results gotten in his county due to the work of this project; cost of structures and changes made in plans, if any.

RESULTS: Results will be measured by number of new buildings constructed, old buildings remodeled, value of new structures constructed, rearranged farmsteads, etc. and the spread of influence.
AGRICULTURAL ENGINEERING - 1925
SUB-PROJECT - V - RURAL ELECTRIFICATION

PROJECT STATEMENT.

NAME OF PROJECT The Utilization of Electricity in Agriculture.
DEPARTMENT: Agricultural Engineering.
NUMBER OF PROJECT: No. 6.
PROBABLE DURATION: Two to Five years
IN CHARGE OF PROJECT: Chas. E. Seitz, Prof. Agricultural Engineering, V.P.I.
FIELD INVESTIGATIONS: J.A. Waller, Jr., Asst. Prof. Agricultural Engineering, V.P.I.
ASSISTANTS: Graduate Students.

IMPORTANCE: This is a problem of state wide interest and importance. The constantly increasing shortage of farm labor has made it imperative that the farmer adopt labor-saving devices and practices if he is to make a success of his farming operations. Many farmers and others familiar with the subject believe that electricity offers a means of solving many of the farmers' labor and power problems, and everyone admits that electricity in the home will be a boon to the farm housewife and will be an important factor in improving living conditions on the farm.

There are certain difficulties, however, that at present prevent the general application of electricity to agriculture, but it is believed that by an intelligent study of the whole problem, many of these difficulties can be removed. Investigations of the economic use of electricity on the farm should precede the establishment and use of electrical equipment, in order to insure maximum results at a minimum cost.

There is little difference between the urban and rural electric service, except for the greater amount of distributing system necessary to serve the same number of rural customers. A mile of urban distribution line ordinarily serves from 30 to 100 or more customers, while a mile of rural line seldom serves more than three or four customers. At the present time, the farmer customer, as a general rule, uses very little more kilowatt hours of electricity than the urban customer. It is therefore clearly evident that it is necessary to charge the farmer considerably more for this service than the city user. In fact, the rural business, as a rule, has not been profitable to the power companies.

If the consumption of electricity on the farm could be materially increased, it could, in most cases, be done with only a comparatively small increase in the fixed cost, and the power company would be able to sell the larger amount of energy to the farmer at a very much reduced cost per kilowatt hour than when only a small amount of energy is sold, and in this way make it profitable, both to the farmer and to the power company.
A request for this investigation has come from farmers, farmers' organizations, electrical power companies and from both the National and State Committees on the Relation of Electricity to Agriculture.

OBJECT:
To determine the optimum economic uses of electricity in agriculture;
To study the value of electricity in lowering the cost of agricultural production, and improving living conditions on the farm;
To find practical means and methods of supplying the Virginia farmers with central station electrical service.

The problem resolves itself into two main divisions:

1. What is the best way to supply electricity to farmers, and what is involved in so doing?

2. How can the service be utilized by farmers so that it will be profitable to them?

In order to solve these problems, it is necessary that a thorough and systematic study be made of the application of electricity to agriculture. Such a study will be divided as follows:

SUB-PROJECT
- I -
A field study to determine the optimum and economic uses of electricity in agriculture, having as objectives the following considerations:

(a) What field operations can be performed by electric power?

(b) What operations on the farmstead can be performed by electrical power?

(c) What industrial operations can be performed with profit on the farm?

(d) What operations in the farm home can be performed by electrical power?

(e) What other uses may be made of electrical energy that will increase the production on the farm?

(f) What should be the arrangement of equipment on the farm and in the home that electrical power may be used economically to perform the above various operations and to develop machinery and equipment to carry our these operations?

SUB-PROJECT
- II -
A general survey of the present available sources of electric power, covering its application to agriculture, its geographical distribution, etc.:

(a) What are the methods of supplying electric service to rural customers?

(b) What are the costs of supplying electric service to rural consumers?
(c) To what extent is electricity now being used, and for what purposes, on the farms of the State?

SUB-PROJECT - III -

A farm power survey for the purpose of finding out the power requirements for each distinct type of agriculture in the State, such as:

(a) Dairy Farming,
(b) Beef Cattle Farming
(c) General Farming,
(d) Fruit Farming,
(e) Truck Farming,
(f) Tobacco Farming,
(g) Poultry Farming.

METHOD OF PROCEDURE:

The method of procedure under Sub-Project - I - will be to conduct definite experiments and studies at the college station and in the field.

At the College Station:
The Department of Agricultural Engineering will make investigations of certain problems that are turned in to the department by the field man and that can be handled to better advantage at the college than in the field.

In the Field:
Farms will be selected in communities of the State representing the distinct types of agriculture, and which offer the best possibilities for making the field studies. Communities will be selected where rural electric lines are already established and one or more communities where new rural electrical lines will be constructed. The cost of construction, maintenance, operation, and cost of energy, as supplied, will be determined by the power company supplying the service, and this data made available to the Department of Agricultural Engineering. Other data, such as maximum demand, the load factor, power factor, distribution of load, etc., will be determined by the cooperation of the Department of Agricultural Engineering and the power company.

The Department of Agricultural Engineering will make a survey and prepare plans of the farmsteads and buildings on the farms selected for the studies, as well as make a farm power survey. A farm management survey will be made by farm management specialists. From these surveys can be determined what operations on the farm will be electrified and what equipment should be secured and installed. Records will be kept of each individual piece of equipment as to amount of work done and current consumed, together with the condition of operation, so that the value of this equipment can be accurately determined and the conditions required for the most efficient operation set forth.

The Department of Agricultural Engineering will secure data on the cost of present sources of farm powers and upon the labor required for carrying out the operations on the farms that are to be electrified. This study will be continued after the farms are electrified, in order to show the cost of electric power as compared with other power. The farmer will be required to keep certain labor records,
but most of the data will be secured by the field man who will be right on the job to keep records of all operations, advise the farmer on the installations, etc. This department will conduct all experimental work, keep all records secured from the project, and formulate the results of the work for publication.

An attempt will be made to use electricity for all power purposes in the farm, and to develop new uses and new equipment for the old operations and for the new operations, in order to determine the optimum economic uses of electricity on the farm.

The method of procedure under Sub-Project - II - will be to get a list of all farm consumers and the amount of electricity used from central station power companies, and such other data as the number of farmers to the mile of line, type of contract, rates, etc. will be secured from these companies. A list of all isolated plant owners, both gas engine and water power, will be secured. A questionnaire, dealing with the principal items on which information is wanted will be sent to all these users of electricity.

The method of procedure under Sub-Project - III - will be to use the data gotten from the National Farm Power Survey, recently made by the U.S. Department of Agriculture, supplementing this data by more specific studies to be made by the Department of Agricultural Engineering in certain sections of Virginia.

The Department of Agricultural Engineering of the Virginia Polytechnic Institute will conduct the experiments and research studies necessary. The Virginia State Committee on the Relation of Electricity to Agriculture will act as an advisory and co-ordinating body for this work. The co-operation of other departments of the College, Extension Division and Experiment Stations and other interested agencies will be solicited.

The general supervision of these investigations, laboratory and office facilities will be provided by the Department of Agricultural Engineering. Traveling and subsistence expenses for the field force and such other expenses and help that may become necessary will be provided by the special fund raised by the Virginia State Committee on the Relation of Electricity to Agriculture, and given to the Virginia Polytechnic Institute, for the purpose of conducting these investigations. The amount of the fund already pledged for the first year's work is $4,500.00, with the probability of a considerable addition to this amount.