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Club Series No. 72

NORTH CAROLINA

4-H FARM and HOME ELECTRIC MANUAL

(Aids in Preparing Record Book)

Name _____ County _____

Address _____ Age _____

Name of 4-H Club _____

Years in Club Work _____

Years Carrying Farm and Home Electric Project _____

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4-H FARM AND HOME ELECTRIC MANUAL

Prepared by G. S. Coates

INTRODUCTION

The 4-H Farm and Home Project is set up to develop in the member an active interest in electricity and its many uses. The member should acquire a working knowledge and skill in using electricity effectively and profitably, and should be capable of planning improvements on the farm and in the home through a more efficient utilization of electricity and electrical equipment.

The activities of the club member in this project would not be complete without teaching others of the many advantages of electricity observed while carrying out this project. As a result of this project, other club members can learn how electricity, when properly used, can bring better living to the farm and farm home.

GENERAL SUGGESTIONS

Activities in the Farm and Home Electric Project should be carried out during the entire year and a record made of these activities as they are being performed. When the time comes to submit the final report, all the necessary information will be at hand in a complete and organized form.

Take pictures of your project activities and include them in the report in the proper places. Any drawings, clippings, or illustrations which aid in explaining the different phases of the project may be included in the record. *Do not make a scrap book of your record.* Any news articles, pictures, notes or other information about rural electrification, but not directly about your record, should be kept in a separate binder, and not turned in with your record. Many leaflets, magazines, and other forms of literature concerning electricity are available through many sources. A reference book of such electrical information could prove valuable in acquiring a broader working knowledge of electricity.

The record book as given to you is fastened together only temporarily. Take it apart and add any additional pages necessary to complete your record.

Complete your record neatly. Learn as much about electricity and its uses as you can each year; put what you have learned into practice; and then teach others.

Ask your local 4-H Club Leader or County Extension Agents for further information and help on this project.

SUGGESTIONS FOR COMPLETING THE RECORD

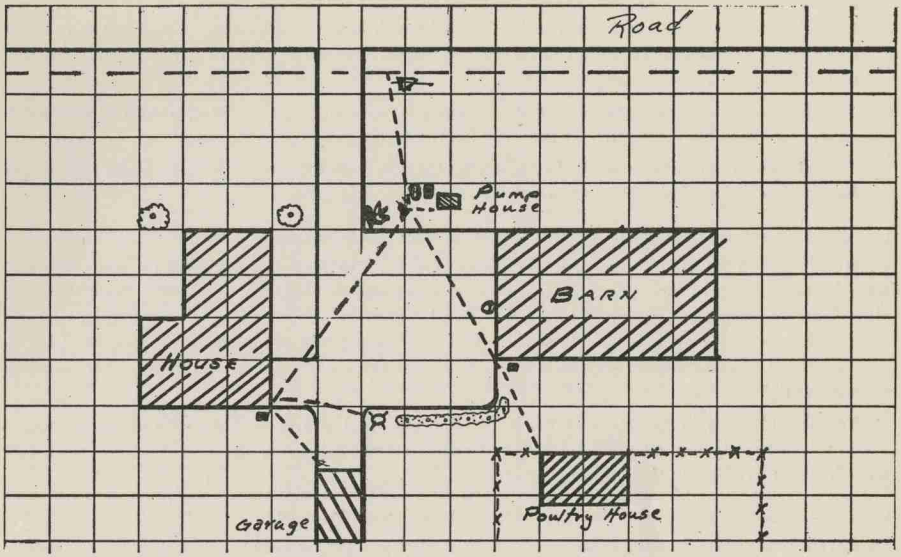
I. The Story of My Farm and Home Electric Project.

This should be a summary of your activities in paragraph form. Tell how you became interested in the project or particular activity in the project and what the completion of the project means to you. What effect will this project have directly or indirectly on your family standard of living, comfort, farm operation, or your future activities?

II. A. Sketch Showing Where Electricity Is Used on the Farm and in the Home.

In completing this section, you are to observe how electricity is now distributed throughout your home and to other buildings. You may find as you record where each switch and outlet is located that you have either a good or poor arrangement. You probably will learn where the switchbox is located, sizes of fuses used, number of outlets, and many other facts you did not know before. Below is a wiring example.

FARMSTEAD WIRING PLAN



Transformer
Pole
Motor Outlet
Yard Light
Power Line
Meter
Fuse Panel
Building
Fence
Tree
Evergreen tree
Hedge

II. B. Electrical Equipment Now Used on the Farm and in the Home.

In carrying out your project, you are expected to learn about electrical equipment you now have in the home and on the farm. By knowing more about this equipment, you will be better prepared to use and care for it.

Tell in your own words what each piece of electrical equipment means to your family in the way of comfort, profit, or happiness. How was the job done before? The following is an example:

1. ELECTRIC RANGE. We have used the electric range in our home three years. It is one of several new pieces of equipment added when the kitchen was remodeled.

   Our farm is a tobacco farm, and Mother has to help on the farm during the busy harvest season. With the use of the electric range, she can prepare a meal much easier and in less time than she could with the old wood stove. Hours of labor were spent cutting wood and building fires in the old stove.

There are many other reasons why the new range is so important in our home. The heat is clean and free from soot. Hands and utensils are never smudged. Automatic timers and thermostatic control of electric ovens allow cooking to be done with minimum of watching. The kitchen is never over-heated, as was the case before; consequently Mother has no trouble in getting other members of the family to help her prepare meals.

On the electric range the amount of electricity is easily regulated, making controlled heat available at all times. By regulating the heat, the food is better prepared.

The cost of cooking is small. In estimating the cost from the electric bill, we figure it costs our family of four less than $2.00 per month to use our electric range.

II. C. 1. Electrical Equipment We Do Not Have and Need Most.

In this section you should determine the pieces of electrical equipment you need on your farm and in the home, in order of their needs. For example, if you need an electric water system more than any other electrical equipment, it should be the first listed, and so on. Write a paragraph explaining why you have decided each piece of equipment is needed. Tell who assisted you in making your decision. That is, did you talk to several salesmen, representatives of the electric power supplier, or with the other members of your family?

You should really investigate your needs and find out what you need. Your reasons for wanting a certain piece of equipment or appliance may be similar to the sample reasons given concerning the electric range in the preceding section of this report.

II. C. 2. Outline of Doing a Job by a Better Method with Electricity.

Carefully study the method of doing a task in the home or on the farm that you think could be done more efficiently with the use of electrical equipment. Several examples of individual activities are: laundering, watering livestock, storing crops, cooking, ironing, use of timing devices for cooking, lighting, crop processing, brooding, etc. Break down the work involved in the present method. How much labor and money can be saved? How long must this method be used to pay for itself either in money or convenience?

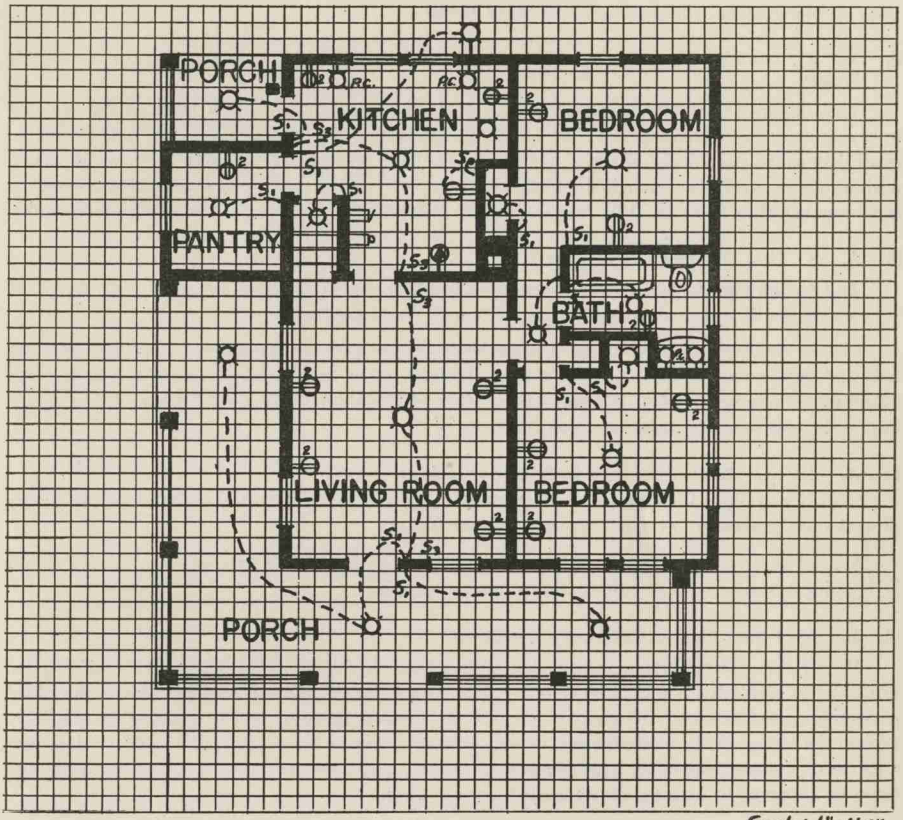
II. D. Rearrangement of Electrical Equipment to Improve a Job.

Effort should be made to arrange electrical equipment so that the maximum efficiency could be obtained. You can do this by studying the present arrangement and through reading and talking with others determine a better arrangement. Discuss in this part of your record the advantages of changing the present arrangement of electrical equipment or the use of electricity to provide a more convenient or efficient way of doing a job. Take the study center, for example. Do you study in the living room with extra noises and not enough light? Plan to rearrange this job. Set up a private study center. Is the kitchen properly arranged? Maybe you need to remodel the kitchen and rearrange the stove, refrigerator and wiring. Can you conveniently repair farm equipment with the present shop arrangement? Plan a farm shop and list electrical tools needed. There are many other such activities in which you already use electricity that you would like to change.

III. A. 1. What You Have Learned.

One of the best methods to learn about the subject in which you are interested is through reading, listening to others and studying. Make note of any valuable information you have received through any of these methods. List books, magazines and bulletins read; magazines subscribed to, lectures attended, and any other effort you have made to learn about electricity. Have you talked with an electrical sales-

WIRING PLAN FOR A HOUSE



WIRING SYMBOLS

- Ceiling Light
- Pull Chain
- Bracket
- Range Outlet
- Duplex Convenience
- Bell
- S_1 Single Pole Switch
- S_3 Three-way Switch
- S_4 Four-way Switch
- S_P Switch with Pilot
- Buzzer
- Fuse Panel

man, advisor, or any other person who works in the electrical field? How many tours or visits have you made to power plants, substations, or electrified farms?

III. A. 2. What You Have Made, Adjusted, Repaired, Installed, and Used in Carrying Out the Electric Project.

The subject of this section explains itself. Record each incident when *you* assist or do any task involving the use of electricity. Have you changed a fuse, installed a duplex convenience outlet, replaced small light bulbs, made a pig brooder, used an electric drill, cooked a meal using the electric timing devices, made a study lamp, repaired an extension cord, or used an electric ironer? These are only a small number of jobs you could do during one year. *What you learn by doing will not be easily forgotten.*

III. A. 3. How Did You Teach Others?

This section was included in your project to incourage you to tell what you have learned. Maybe your activities will lead to others wanting to learn more about electricity.

List the number of electrical talks or demonstrations you gave. Actual copies or outlines of these talks and demonstrations should be added here. Any pictures or news articles concerning your teaching others should also be included. Did you invite friends or neighbors to see what you had done on your farm or in your home by using electricity more wisely?

III. A. 4. How Electricity Is Used in Other 4-H Projects.

Discuss your other 4-H Projects in which electricity is used. If electricity had any effect on the quality of work done in these projects, tell how and to what extent.

Many 4-H Club members use electricity daily in other projects. While they are doing so, they should be learning as much about electricity and its uses as possible.

III. B. What Your Club or Community Has Done.

If your club, community, or County Council has done anything cooperatively toward teaching the principles of electricity, it should be recorded here. Maybe your club has a bulletin board in the school presenting up-to-date facts on electricity; your County Council probably had a speaker or a movie to explain the care of electrical equipment; or the community wired a club house. Your club could sponsor a survey of a community to see what pieces of electrical equipment are used and how the community could be improved by carrying out an electrification program.

OPERATING COST OF ELECTRICAL EQUIPMENT

On the Average Farm	*Estimated Kilowatt-hours*
Barn Hay Curing	75 per ton
Barn Hay Curing (with heated air)	15 per ton
Brooding	½ per chick per month
Churning	1 per 100 lb. butter
Corn Husking and Shredding	5 per ton
Corn Shelling	7 per 100 bu.
Cream Separating	½ per 1,000 lb. milk
Dairy Barn Cleaner	1 per 20 cows per day
Dairy Barn Ventilation	2½ per 10 cows per day
Dairy Utensil Sterilizing	6 per 25 cows per day

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Dairy Barn Ventilation	2½ per 10 cows per day
Dairy Utensil Sterilizing	6 per 25 cows per day

Dairy Water Heating	25 per 100 gal.
Electric Stock Waterer	200 per winter season
Farm Freezer (16 cu. ft.)	85 per month
Farm Shop	2 per month
Feed Grinding	1 per 100 lb.
Grain Cleaning	1½ per 100 bu.
Grain Elevating	3 per 1,000 bu.
Hay Baling	3 per ton
Hay Hoisting (5 hp)	1 per 7½ tons
Irrigating—Surface	3 per acre-ft. per ft. lift
Lighting Entire Farm	65 per month
Milk Cooling	1 per 10 gal.
Milking—Portable	1½ per cow per month
Paint Spraying	1 per 250 sq. ft.
Sheep Shearing	1½ per 100 sheep
Silo Filling	1 per ton
Silo Unloader	1 per 20 cows per day
Soil Heating (Hotbeds)	1 per 3 by 6 ft. sash
Threshing	½ per 100 lb. grain
Ultraviolet, Chicks	⅜ per brood per chick
Water Supply—Entire Farm	20 per month
Welder	5 per month

In the Home	*Kilowatt-hours per Month*
Blanket, Automatic (8 hrs. per day)	15
Cleaner (Tank) (4 hrs. per month)	2½
Clock (1 month)	1½
Clothes Dryer (10 hrs. per month)	50
Dishwasher (2 washings per day)	25
Fan (10 in.) (25 hrs. use)	1
Food Freezer (8 cu. ft.)	40
Heat Lamp (10 hrs. use)	2½
Heating Pad (10 hrs. use)	3/10
Iron (12 hrs. per month)	6
Ironer (10 hrs. per month)	10
Lamp (100W) (3 hrs. per day)	9
Mixer (10 hrs. per month)	1½
Portable Heater (10 hrs. use)	10
Radio (130 hrs. per month)	10
Range (Family of 4)	90
Refrigerator (8 cu. ft.)	22
Roaster (16 hrs. per month)	12
Television (90 hrs. per month)	18
Toaster (3 hrs. per month)	3
Washer (Automatic) (12 hrs. per month)	3
Water Heater (Family of 4)	350