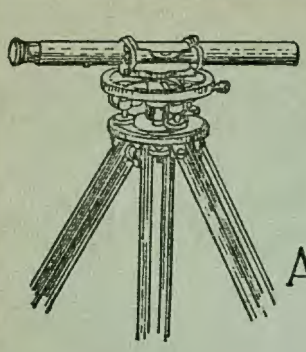

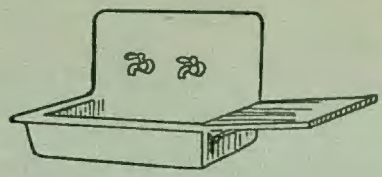

AGRICULTURAL ENGINEERING NEWS LETTER

AGRICULTURAL EXTENSION DIVISION
UNIVERSITY OF MINNESOTA

UNIVERSITY FARM, ST. PAUL—FEBRUARY 15, 1938—NO. 71

The Advantageous Use of Electricity on the Farm

ANDREW HUSTRULID

The construction of rural power lines is moving forward at a more rapid pace than ever before. During the first six months of 1937, 2,572 Minnesota farms were given high line service. There are reasons to believe that the number was much larger during the last six months of 1937, although no figures are yet available. To the more than 18,000 Minnesota farm families now receiving high line service and to the thousands more who will receive it in the near future, the advantageous use of electricity is a most important problem.

What is meant by advantageous use of electricity? It should mean electricity at work on the farm doing the tasks the farmer has to perform in a better or more economical way than these tasks have been done before. It should mean a lessening of drudgery, increased leisure, and the provision of the comforts and conveniences that make for health and happiness. In short, it should mean the saving of time, labor and money and an increase in health and happiness.

There are three important requirements for the advantageous use of electricity on the farm, namely: (1) adequate wiring, (2) quality equipment and appliances, and (3) maximum use. These will be discussed briefly in order.

The electric wiring should be adequate, well laid out and safe. Nothing is more expensive than an inadequate wiring job. Provisions should be made not only to take care of immediate needs but also to supply ample reserve capacity for the future. The installation should be planned to make it as convenient as possible. Unsafe wiring constitutes a dangerous hazard both from the standpoint of fire and injury to people or livestock.

Electricity in the home or on the farm must be used through various appliances. It is important that these be of good quality. Inferior appliances will be the most expensive in the long run although the saving may seem material at the time. Equipment of poor quality is usually more costly to operate, has a higher maintenance cost, and has a shorter life.

The farm family that secures electric service would do well to give careful thought to the equipment with which to provide themselves in order to make **maximum use** of this versatile servant. Briefly, electricity may be used in three principal ways: (1) as a source of light, (2) as a source of heat, and (3) as a source of power.

To the majority of people electricity means electric light. The advantages of electric lights are too numerous and obvious to mention. However, if electricity is to be used for light only, it is doubtful whether rural lines are practical. It will be too expensive for the farmer and a losing investment for the power company. It can not be emphasized too strongly that the more extensive use the farmer makes of his electrical service to operate farm machinery and household appliances, the greater assurance he will have that his electrical system will be successful and economical.

This means that electricity **must** be used for heat and power as well as lights. The flat iron, range, brooder, toaster, incubator, and soldering iron are all widely used appliances utilizing electrical energy converted into heat. It is logical that electric heat should find growing use in farm applications. The accuracy and ease of control, the elimination of fuel handling, the safety from fire, and the cleanliness all make it the ideal heat.

A consideration of the use of electricity as a source of power virtually means a consideration of the electric motor. Attention must be called to the rather self-evident fact that of all the uses for electricity on the farm, over half of them utilize the electric motor. The water pump and washer are two of the most popular pieces of equipment on the farm. These are possible because of the motor. The electric refrigerator, vacuum cleaner, fans, sewing machine and even the clocks depend on the electric motor. Outside the farm home there are many applications for the electric motor. Examples are water pumping, grain handling, feed grinding and mixing, and ventilating, whether on the dairy farm, the general livestock farm or the poultry farm. Considering all of these uses it is easily understood why the electric motor plays such an important part in electrifying the farm.

With few farms making anywhere near full use of electric motors, there is evident need for pointing out some of their advantages and uses. The advantages are numerous. The electric motor is more reliable than any other source of power for it has fewer parts to get out of order, only two bearings to oil occasionally, nothing to be affected by frost, and requires practically no attention. It can not be surpassed in safety, ease of starting and stopping, constancy of speed, noiselessness, freedom from poisonous fumes and dirt, and ability to carry a large overload for a short period. It can be made to work automatically. One example of this very desirable feature of electric power is demonstrated by the automatic water pump. Incidentally, water under pressure is the first requirement for rural sanitation, and this can readily be met at a low cost by pumping water with an electric pump.

There are two types of motor installations—attached or individual drive and portable motors. The trend now is toward the inclusion of the motor as part of any complete machine. An individual motor should be used for machines which require frequent and long continued running. There are many pieces of equipment now on the farm operated by hand or internal combustion engines that could be economically operated with electricity using an individual motor drive. There are other machines whose intermittent or seasonal use does not justify the investment in a motor restricted to the one use alone. Here enters the portable electric motor.

Two sizes of portable motor units, a ¼ horse power and a 5 horse power, will care for all the usual farm machines not provided with attached motors. The larger motor can be bought mounted on wheels complete with starting switch, extension cord and extra pulleys. It may be used for such operations as shelling corn, filling silo, grinding feed, elevating grain, sawing wood, and hoisting hay. The ¼ horse power motor under usual conditions will supply ample power to drive any machine originally designed for hand operation. It is ideal for operating churn, small concrete mixer, one-hole corn sheller, cream separator, post drill, emery wheel, fanning mill, meat grinder, shallow well pump, washing machine, and a variety of other equipment found on the farm. Thus, it would seem that the portable electric motor deserves wider use for machines now on the farm as it offers a tremendous possibility for advantageous use of electricity.

In conclusion, it might be interesting to set down some of the uses that farmers make of electricity. A survey of several sources shows that the most widely used appliances, in addition to the lights, in the farm home are: radio, iron, washing machine, vacuum cleaner, water system, refrigerator, range, clock, toaster and fan. On the farm they are: milking machine, water system, brooder, emery wheel, portable motor, and electric fence.

Published in furtherance of Agricultural Extension Acts of May 8 and June 30, 1914, P. E. Miller, Director, Agricultural Extension Division, Department of Agriculture, University of Minnesota, cooperating with U. S. Department of Agriculture