

AN ELECTRIC FARM TO BE TRIED ON LONG ISLAND

A THOROUGH test of electrical farming is being made on an elaborate scale near New York. The electric current is set to work to quicken the actual growth of familiar plants and vegetables. It is expected that the rate of development will be greatly increased, if not perhaps be doubled by this mysterious stimulant. The friends of the new farming look forward to a day when the crops will be immensely increased the country over by this simple expedient.

The tests are made by ex-Judge Thomas H. Williams of Brooklyn on a farm at East Northport, L. I. A plot of two acres favorably located has been set aside for the experiments. The methods employed are closely copied from the electric farms of Germany, where surprising results have been obtained. As the success of the new method is proved the farm will be enlarged.

New York's electric farm will present a curious appearance to the layman in such matters. The ground used for the tests is planted with iron poles, twelve feet in height, arranged in regular rows. The tops of the poles are connected by a series of wires running crisscross fashion. Their height above the ground will be great enough to permit the workers or even the farm wagons to pass beneath.

The electricity used for stimulating the plants will be developed by a series of windmills, which will lend an attractive skyline to the farm. The surplus current will be gathered in storage batteries. This supply will make it possible to turn on a steady current of electricity at any hour of the day or night, whether the windmills be working or not.

The current used combines a high amperage with a low voltage. It may be supplied at a comparatively slight expense, and with the aid of certain improvements upon the German method,

which Judge Williams is inaugurating, it is believed that the new stimulant may be made a practically commercial possibility.

The electric current may be said to drop from the wires into the ground. It will thus act directly upon the seed throughout their germination and later upon the small sprouts and vegetation. The crops planted will be the familiar fruits and vegetables, for the tests are intended to be of an entirely practical nature.

Interesting tests have been made to prove exactly how the electric fluid works upon plant life. A capillary tube when placed in water charged with electricity shows just how the stimulous of electricity is felt. When the current is turned on water is forced up the tube until it forms several drops at the top. The quantity of water which is thus raised has been found to be in direct ratio to the strength of the current applied.

What happens in the isolated capillary tube under the microscope is, of course, repeated in millions of the capillary tubes of the vegetation under electric culture. The current serves to force the sap of the plant upward just as it raises the drop of water. The circulation of the little tube is thus quickened, the sap is carried further, and the plant is made to grow the faster.

When the current is turned on in the electric farm the invisible fluid leaps the distance from the cross wires above the poles to the earth, thus passing through the plants which are in circuit. If the current be made strong enough a long spark may be formed between the wires and the ground. In damp weather the passage of the electricity through the air often produces a glow which is visible for a considerable distance.

The stimulating effects of the electricity is greater than that of powerful nitrates. The current acts separately, however, and may thus be used to further

stimulate the action of the nitrates. If the growth of a crop for instance be increased 50 per cent. by using a powerful nitrate the addition of the electrical treatment will still further increase the growth and produce remarkable results.

Electrical farming has been carried on with great success near London by Sir Oliver Lodge, as well as in Germany, Belgium, Russia, France, and Switzerland. The results obtained vary considerably in different countries. The general average would seem to indicate that an increase of from 50 to 70 per cent. may be obtained in the size of ordinary farm crops and of from 50 to 60 per cent. in seeds and fruits.

Plants have been compared growing under natural conditions and with the stimulant of the electric treatment, so that an exact measurement might be made. It has been found that after 104 hours of the electric current marked results were obtained. The tobacco plants increased 39 per cent. faster under the electric treatment, beets increased 12 per cent. faster, lima beans, 11 per cent., and carrots 8 per cent. faster.

In the next test great care was taken to determine the exact fertility of the various plots of ground. It was found that a constant current is far more effective than a variable current, even though the time the two act is exactly the same. Under more careful application it was found that the germination of wheat and rye used in the tests was very much more prompt.

At the end of the second test it was found that the barley had grown 23 per cent. faster because of the stimulus of the electric current, carrots 37 per cent. and potatoes 50 per cent. The peas, on the other hand, showed a decrease of 7 per cent. Here is a contradictory fact which must be tested by future experiments. One of the secrets of electric

farming is to have the plants well watered. The increased humidity seems to assist the action of the electricity. It has been found again that the strong sunlight in the middle of the day in some cases reverses the effect of the current, and the plants treated at this time are retarded.

The electric farm of Sir Oliver Lodge just outside London, where very satisfactory results have been obtained, has been increased from ten to twenty-five acres. The wires in this case are strung at a height of 17 feet above the ground, which is rather more than in most of these stations. This height allows the convenient passage of the largest farm wagons and machinery, and does not seem to interfere with the action of the electric current.

The poles are insulated, that is, the current is not permitted to pass from the wires to the ground by this means, which would act as a short circuit. A small dynamo is used, giving three amperes at 220 volts. There is no danger in handling such a current, and the effects are quickly recognized.

In a recent test crop on the English experiment farm the current was applied regularly on ninety days. In all it was allowed to act for 622 hours. The best results were obtained by turning on the current in the Summer only in the early morning hours. In the Spring and on very dull days the current was kept on all day long.

The best results were noticed in the case of very young plants. The seedling reared under the stimulating effects of electricity were more deeply colored than in the case of ordinary plants. The stalks were found to be from 10 to 20 per cent. higher.

When the flowering began the current was turned off. The grains began to seed

about the same time. The electrically treated crops were ready for harvesting four days before the regular crop. The gain in time was not important, but the increase in the yield well repaid the electric farmer for his trouble.

The electric crop of wheat was 39 per cent. greater than that of the wheat grown near by under normal conditions. A strawberry bed which had been systematically treated by an electric current for 115 days, or for 1,014 hours, showed an increase of 35 per cent. over the regular crops near by. Excellent results were also obtained with tomatoes and raspberries.

In Italy an entirely different system of applying the electric current has been employed, with very interesting results. Instead of stringing the electric wires above the ground, plates of zinc, copper, and iron are sunk at regular intervals in the ground and connected with wires leading to the dynamo. The tests have been made with a variety of plants, but the best results have been obtained with very young plants before germination.

The heat generated by the network of wires and the resistance offered by the ground directly affects the roots. By applying the electricity for 2,000 horse power hours an increase of from 30 to 40 per cent. in the size of the crop has been obtained. The cost of installing such a system of electro-culture is high, but the cost of maintenance is very low. It is more costly, therefore, to set up than the overhead system, but cheaper to operate.

Still another system of electro-culture consists in suspending powerful electric lamps above the beds and allowing the rays from the lamp to play upon the crop. This test has been carried out in glass houses with gratifying results. Some 200 plants, comprising various kinds of palms, grasses, tomatoes, &c., were thus forced with the light.