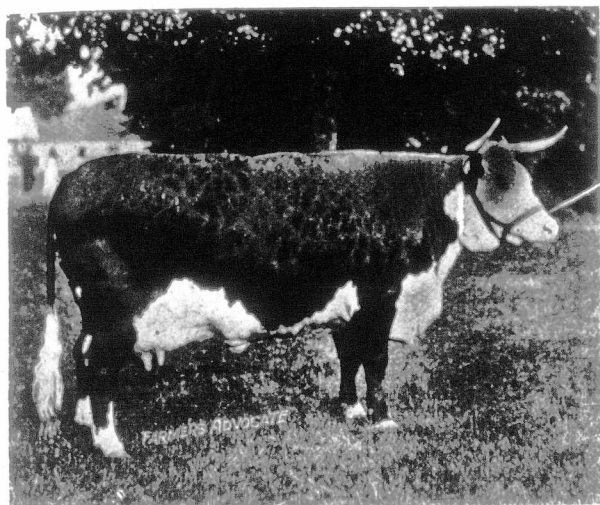


as good as if put in in one day. Where an engine is hired to drive the cutter, of course it is economy to get help enough to finish the work in a day or two. An important point to be observed is the mixing of the silage by the man in the silo and keeping it high on the outside and well tramped there.

It is well to harvest the corn when it is sufficiently matured to make the best silage, which experience has taught is when the kernels on the cob are well glazed, or in what is commonly known as the roasting stage. In order to have it reach this stage before frosts come, it is necessary to plant varieties that have been found to mature early in the district. It has been proved beyond a doubt that the quality of the silage made from matured corn is vastly better than that obtained from green, immature corn, usually the result of being too thickly sown,



DAINTY 10th.

First-prize Hereford cow and female champion, Royal Show, Cardiff, 1901.  
OWNED BY MR. R. D. CLEASBY, BRECON.

which develops an excess of acid in the silo and produces sour silage. While frost certainly does not improve the quality of silage, we believe it is a mistake to hurry the harvesting of the corn, if it is green, in order to escape the frost. We would prefer to risk the exposure to frost in hope of securing more maturity in the crop, as we have known instances where the leaves had been whitened by frost and when dry would grind into powder, and yet the corn made sweet silage of excellent quality. The leaves are the poorest part of the plant for feeding purposes, and are no great loss, though, of course, the crop being well matured, it is preferable to secure the leaves in succulent condition. Two years ago the writer saw a 12-acre field of corn, in the Province of Quebec, that looked to be good for 20 tons an acre, being harvested in October and put into the silo by the use of a small gasoline engine. We were since informed that it was the middle of October before it was all in the silos, and that it made excellent silage, although frost had tried it repeatedly before it was all harvested. If from being frozen, or from unavoidable delay in harvesting, or other cause, the stalks and leaves become very dry, it is wise, and indeed necessary to good silage, that water be sprinkled on it as it goes into the silo, which is readily done, where the blower is used, by placing a barrel with a spigot alongside the drum of the blower, near the wind hole, and the



WARRIOR QUEEN.

First-prize Shorthorn cow, Royal Show, Cardiff, 1901.  
BRED AND OWNED BY CAPT. W. H. O. DUNCOMBE, WARELEY PARK, HUNTS.

suction will take in the water and distribute it evenly. Cover the silage with cut straw or green clover to exclude the air, or water the top well and sow oats on it, which will grow and form a mass of roots and leaves that will serve the same purpose.

#### Cannot Do Without It.

DEAR SIRs,—We are all well pleased with the FARMER'S ADVOCATE, and would not think of doing without it. There is no paper that suits the farmer as well as the ADVOCATE. Wishing you every success, I remain, Yours truly,  
Grey Co. ROBT. G. DUNCAN.

#### To Combat the Hessian Fly.

In an emergency bulletin issued last month by Professors Roberts, Slingerland and Stone, of Cornell University Agricultural Experiment Station, on the Hessian fly and its ravages in the State of New York, the authors state that experience with a three-years siege of the fly some 40 years ago, together with this year's experience, lead to the following conclusions:

1st. That wheat-raising need not be abandoned, but the number of acres should be reduced until by reason of such reduction every acre sown will be raised under superior conditions.

2nd. That the soil must be so well fitted and so fertile that a strong, healthy growth will be secured in the fall, though the sowing of the seed be delayed 10 to 15 days beyond the usual time. Such preparation of the soil will also help the wheat to recover from the winter injury.

3rd. That the Hessian fly injures the wheat more on dryish and poor land than on moist but well-drained, rich soils.

4th. That thick seeding and vigorous growth tend to ward off the fly.

5th. That the resisting power of varieties varies greatly. Those with large, coarse, strong straw are less liable to injury than weak-strawed and slow-growing varieties.

6th. That there were at least six varieties grown in the State this season that were not appreciably affected by the fly, though numerous other varieties in the same neighborhoods were much injured. Of these only Dawson's Golden Chaff has been tested at the station, and this has been found to be a superior wheat for general culture. The other resistant varieties are Prosperity, No. 8, Democrat, Red Russian, and White Chaff Mediterranean.

7th. That farmers in this State cannot be induced to cut and burn stubbles with a view to destroying the insect, since the practice of seeding to grass and clover is almost universal, and burning the stubble, if possible to do so, would destroy the young meadow plants. Work is too pressing also in midsummer to justify destroying the volunteer wheat that comes from the harvest shatterings. Much may be done, however, by sowing early in August, one or more strips on the side or sides of the field. The plants on these strips come on early and form ideal conditions for the laying of the eggs of the fly. Later, after the remainder of the field has been sown, the strips are plowed deeply (using a skim or jointer attachment to the plow), fitted and sown. This preventive measure is about the only one which is worth considering in addition to the late sowing of hardy varieties on well-fitted, naturally fertile soil, or soil made fertile by the liberal application of farm manures and commercial fertilizers.

Much stress should be laid on the proper fitting of the land for wheat. Plowing should be done early—at least six weeks before sowing—to give abundant time for repeated working of the soil in order to recompact the sub-surface soil and secure a fine but shallow seed-bed in which there has been developed by tillage and the action of the atmosphere an abundance of ready, available plant-food. Manures and fertilizers should be kept near the surface and the young roots encouraged to spread out in the surface soil, thus avoiding much of the damage by heaving in winter and leaving the deeper soil for a fresh pasturage for the plants during the following spring and summer.

Unfortunately, it is not possible to give a uniform date for seeding in New York which may be relied on year after year, as such abnormal weather conditions as existed last year upset all calculations which one might deduce from the latitude and altitude of a place. From experience, many New York wheat-growers have learned that wheat sown after the 20th to the 25th of September is usually much less infested with the Hessian fly. Hence, we advise our farmers to fix this date in their minds, and we feel sure that if one can get his neighbors to hold off seeding until about this date, he will win against the fly many more years than he will lose.

Co-operation against the pest.—It is very important to get neighboring farmers to co-operate in late sowing, for one infested field of early-sown wheat may furnish flies enough in the spring to work serious injury in nearby fields. The unusual destructiveness of the pest during the past season should discourage no one from continuing to grow wheat. One must take risks in growing any crop. Sow as late as your local conditions will permit, sow intelligently in a well-prepared seed-bed and on good soil, get your neighbors to do the same, and you will circumvent the Hessian fly nearly every time.

Notes on other methods.—A method which is often recommended, but, unfortunately, little practiced, is to sow narrow decoy strips of wheat about September first or late in August. Many of the fall brood of flies emerging from the midsummer "flax-seeds" will be decoyed to lay their eggs on these strips, and their progeny can be destroyed by plowing under the decoy plants; do not let the decoy strips stand more than four weeks, or but a few days after sowing the main crop.

There is no way of getting at the spring brood of the insect, except to destroy the crop by plowing or cutting for fodder. And the use of insecticides of any kind would be impracticable in a wheat field, even if one could thus poison or otherwise kill any stage of the insect, which is very doubtful.

The pest must be fought by an intelligent appli-

cation of farm practices based on a knowledge of the habits of the insect. A prominent entomologist, Prof. Webster, of Ohio, who has studied the Hessian fly for fifteen years, says he believes that four-fifths of its injuries may be prevented by a better system of agriculture.

#### The Root Growth of Plants.

The North Dakota Experiment Station has made a special study of the root system of growth of various grains and roots as indicating the nature of the cultivation that should be applied:

##### CORN ROOTS.

"Several samples of corn roots have been taken at different stages of growth. Thirty days after

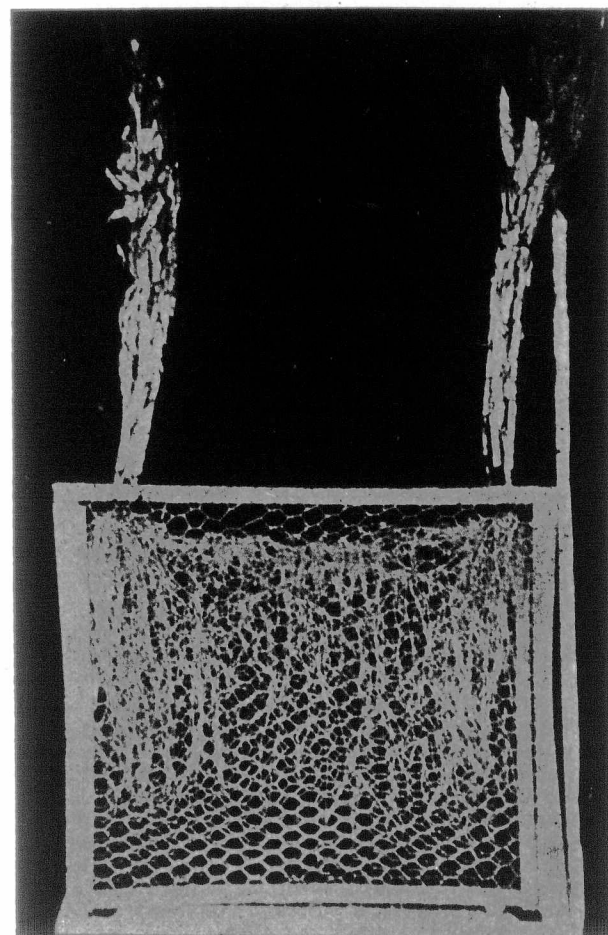


FIG. I.—Showing distribution of roots between two rows at end of growing season. The corn was frosted 90 days after planting.

planting, at the second cultivation, the roots from adjacent hills (hills three feet apart) already meet and interlace. The main development in the early part of the season is laterally or to the side. A few roots have reached a depth of twelve inches, but the bulk of the growth is within eight inches of the surface of the ground. Six inches from the hill the main roots lie within two and one-half to three inches of the surface. Midway between the hills they have reached a depth of four and one-half inches. Deep cultivation even at this stage of growth would have injured the roots.

"The sample of corn roots taken fifty-five days

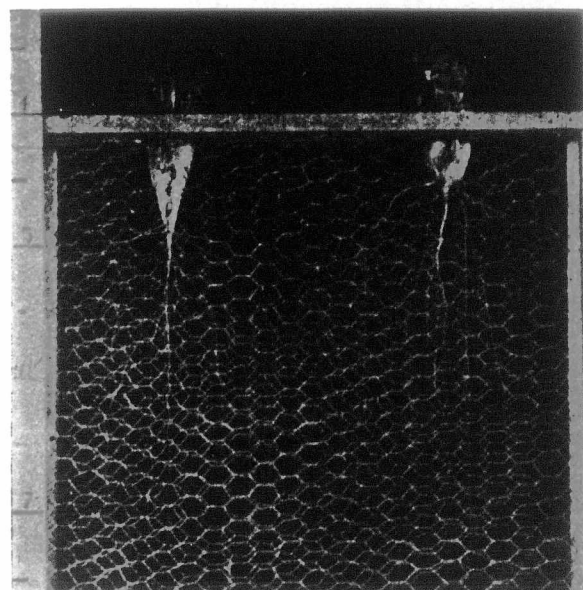


FIG. II.—Sugar-beet roots at maturity on ground plowed six inches deep, but not subsoiled.

after planting, at the last cultivation, shows that at this stage the main roots have penetrated to a depth of two and one-half feet. The number of horizontal roots has increased and their length is much greater, many extending now from hill to hill (three feet eight inches apart), inclining most of their length, but finally, at about three to three and one-half feet from the hill, they dip often almost vertically downward. The horizontal roots, as well as the vertical, send out numerous branches and small feeders in all directions. Many vertical branches from the horizontal roots have penetrated