a reddish cast, making its way with considerable activity down the blade, and saw it till it disappeared between the blade and stem of the plant. This I have no doubt, was the produce of one of the eggs, and would, I presume, have hatched much sooner, had the plant remained in the field. It was my intention to have carried on the experiment, by endeavouring to hatch out the insect from the flax seed state into the perfect fly again; but being called from home, the plant was suffered to perish. The fly that I caught on the blade of the wheat, as above stated, I enclosed in a letter to John S. Skinner the editor of the *American Farmer*, of Baltimore, who pronounced it to be a genuine Hessian fly, and identical in appearance with others recently received from Virginia.'

"Dr. Chapman agrees with the writer, in saying that the Hessian fly lays her eggs in the small crevices of the young leaves of the wheat. Mr. Havens, in an article on this insect, which will again be referred to, states, that the fly lays her eggs on the leaves. In the fortieth number of *The Connecticut Farmer's Gazette*, Mr. Herrick says, 'I have repeatedly both in autumn and spring, seen the Hessian fly in the act of depositing eggs on wheat, and have always found that she selects for this purpose the leaves of the young plant. The eggs are laid in various numbers on the upper surface of the strap-shaped portion (or blade) of the leaf.' His remaks in Professor Silliman's Journal are to the same effect. Other authorities on this point might be mentioned; but the foregoing are sufficient, in my opinion, to establish the fact, that the Hessian fly lays her eggs on the leaves of wheat soon after the plants are up. 'The number on a single leaf' says Mr. Herrick 'is often twenty or thirty, and sometimes much greater. In these cases many of the larvæ must perish. The egg is about the fiftieth of an inch long, and four thousandth of an inch in diameter, cylinderical translucent, and of a pale red colour.' Mr. Tilghman was correct in supposing that the eggs would hatch in less than fifteen days, under favourable circumstances, for, if the weather be warm, they commonly hatch in four days after they are laid. The maggots, when they first come out of the shells, are of a pale red colour. Forthwith they crawl down the leaf, and work their way between it and the main stalk, passing downwards till they come to a joint, just above which they remain a little below the surface of the ground, with the head towards the root of the plant. Having thus fixed themselves upon the stalk, they become stationery, and never move from the place till their transformations are completed. They do not eat the stalk, neither do they penetrate within it, as some persons have supposed, but they lie lengthwise upon its surface, covered by the lower part of the leaves, and are nourished wholly by the sap, which they appear to take by suction. They soon lose their reddish colour, turn pale, and will be found to be clouded with whitish spots; and through their transparent skins a greenish stripe may be seen in the middle of their bodies. As they increase in size, and grow plump and firm, they become imbedded in the side of the stem, by the pressure of their bodies upon the growing plant. One maggot thus placed seldom destroys a plant; but when two or three are fixed in this manner around the stem, they weaken and impoverish the plant, and cause it to fall down, or to wither and die. They usually come to their full size in five or six weeks, and then measure about three-twentieths of an inch in length. Their skin now gradually hardens, becomes brownish, and soon changes to a bright chesnut colour. This change usually happens about the first of December, when the insect may be said to enter on the pupa state, for after this time it takes no more nourishment. Mr. Herrick informs me, that the brown and leathery skin, within which the maggot has changed to a pupa or chrysalis, is long, egg-shaped, smooth and marked with eleven transverse lines, and measures one-eighth of an inch in length. In this form it has been commonly likened to a flax-seed. It appears then from the remarks of Dr. Chapman, Mr. Herrick, and other careful observers, that the maggots of the Hessian fly do not cast off their skins in order to become pupæ, wherein they differ from the larvæ of most other gnats, and agree with those of common flies; neither do they spin cocoons, as some of the Cecidomyians are supposed to do. Mr. Herrick, in one of his letters, observes, that 'the pupa gradually cleaves from the dried skin of the larva, and, in the course of two or three weeks is wholly detached' from it. Still enclosed within this skin, which thus becomes a kind of cocoon or shell for the pupa, it remains throughout the winter, safely lodged in its bed on the side of the stem, near the root of the plant, and protected from the cold by the dead leaves. Towards the end of April and in the forepart of May, or as soon as the weather becomes warm enough in the spring, the insects are transformed into flies. They make their escape from their winter quarters by breaking through one end of their shells and the remains of the leaves around them.

"Very soon after the flies come forth in the spring, they are prepared to lay their eggs on the leaves of the wheat sown in the autumn before, and also on the spring-sown wheat, that begins, at this time, to appear above the surface of the ground. They continue to come forth and lay their eggs for the space of three weeks, after which they entirely disappear from the fields. The maggots hatched from these eggs pass along the stems of the wheat, nearly to the roots, become stationary, and turn to pupæ in June or July. In this state they are found at the time of harvest, and when the grain is gathered, they remain in the stubble in the fields. To this, however, as Mr. Haven remarks, there are some exceptions; for a few of the insects do not pass so far down the side of the stems as to be out of the way of the sickle when the grain is reaped, and consequently will be gathered and carried away with the straw. Most of them are transformed to flies in the autumn, but others remain unchanged in the stubble or straw till next spring. Hereby, says Mr. Havens, 'it appears evident, that they may be removed from their natural situation in the field, and be kept alive long enough to be carried across the Atlantic; from which circumstances it is possible that they might have been imported' in straw from a foreign country. In the winged state, these flies, or more properly gnats, are very active, and, though very small and seemingly feeble, are able to fly to a considerable distance in search of fields of young grain.—Their principal migrations take place in August and September in the Middle States, where they undergo their final transformations earlier than in New England. There, too, they sometimes take wing in immense swarms, and, being probably aided by the wind, are not stopped in their course either by mountains or rivers. On their first appearance in Pennsylvania, they were seen to pass the Delaware like a cloud. Being attracted by light, they have been known during the wheat harvest, to enter houses in the evening in such numbers as seriously to annoy the inhabitants.

"Various means have been recommended for preventing or lessening the ravages of the Hessian fly; but they have hitherto failed, either because they have not been adapted to the end in view, or because they have not been universally adopted; and it appears doubtful whether any of them will ever entirely exterminate the insect. It is stated in the before-mentioned report to 'the Philosophical Society,' that Miss Morris advises obtaining 'fresh seed from localities in which the fly has not made its appearance,' and that 'by this means the crop of the following year will be uninjured; but in order to avoid the introduction of straggling insects of the kind from adjacent fields, it is requisite that a whole neighbourhood should persevere in this precaution for two or more years in succession."—Harris.

It seems to be generally admitted that the variety of wheat called *Mediterranean*, introduced a few years since into the United States where it is now extensively cultivated, resists the attacks of the Hessian fly. Hence it may be sown very early in the fall, long before it would be safe to sow the common varieties, by which another great advantage is gained, in its escaping the rust and mildew so apt to affect crops which are backward in the time of ripening.'"

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TO DRY COWS OF THEIR MILK.

In looking over a file of the Dublin *Farmer's Gazette*, we met with the following recipe, which may sometimes prove useful. A case occurred the other day, in which we would have tested its efficacy ourselves, had we been aware of its existence. It is stated that in using the following it is not necessary to have recourse to bleeding or purging:—

"Let the cows be milked dry, then take four ounces of old tallow, two ounces beeswax, half a pint of vinegar, six ounces spirits of turpentine, and half a pint of tar; boil these together for 15 minutes over a slow fire, let the mixture cool, then rub the udder and milk veins of the cow with it, and she will become dry in three days. There is no restriction of food, and the cows may be allowed to eat anything they choose. The above has never been known to fail, and the quantity is sufficient for six cows."

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SYSTEMATIC FARMING.

It is the object of systematic farming to accomplish the greatest results by the smallest expenditure of force or money; and the differences between the force expended and the result obtained being a constant measure of the gain acquired, it ought ever to be the sole end and aim of the farmer to produce effects proportional to the means employed. It must not, however, be supposed that a saving of labour is equivalent to a saving of money. So far from this being the case, the very opposite is found true in practice, viz.—that the profit is more dependant upon the amount of properly directed labour bestowed, than it is upon the comparatively trifling saving effected by withholding what is absolutely necessary for bringing the soil to its highest possible pitch of fertility. It is quite evident that a maximum result can never be obtained in any case, where farming is conducted in a hap hazard manner, subject to no rules either of experience or science; there must be an adaptation of means to an end, otherwise disappointment and loss are sure to follow. On every properly conducted farm we invariably find, that some system or other has been adopted suited to the nature of the soil and climate, and which reflective experience and sound principles of science have pointed out as the one most likely to produce the greatest effects that the causes set in operation are capable of. The first step towards systematic farming is, the adoption of such an alternation of crops as is suited to the physical condition and chemical properties of the soil, and which will develope its energies without destroying its fertility. Very different rotations must be adopted in a country where its geological formation is characterised by dissimilarity; yet, notwithstanding this difference, there is one common object that must be kept in view by all in the selection of any particular mode of cropping, viz, to bring the soil into a condition in which it will produce the various crops, whether grain, grass, or roots, which may be necessary and profitable to raise. The following remarks from an Irish agricultural paper of high standing, are in most respects as applicable to this country as to Ireland:—

"The farmer, on a light dry soil, experiences no difficulty in growing potatoes and turnips, but he is very often disappointed in his wheat crop; on the other hand, on a heavy retentive clay soil, he succeeds in wheat and fails in green crops. It was thought at one time impossible to remove or alter these physical conditions, so characteristic of light and heavy soils, yet the progress of enlightened agriculture has effected an approximation to a common condition, in which the one is capable of producing fine crops of wheat, and the other equally good crops of turnips; and this has been effected by means of two systems peculiar to the farming of the present day, namely, sheep-folding on light soils, and thorough-draining and subsoiling on heavy clays. In the one case it was necessary to consolidate the soil, in the other to loosen it: sheep-folding has effected the one, and the Deanston system the other.

"These improvements have led to the establishment of a more uniform system of farming, and one under which a rapid increase of produce, instead of being detrimental, has proved highly conducive to the fertility of the soil. To carry on a regular system which will embrace within it every department of farming, it is necessary to have a due proportion of the different cereals, leguminosæ, and also green crops, such as turnips, potatoes, mangel-wurzel, and carrots; the two former supplying dry litter and fodder, while the others yield saccharine, amylaceous and albuminous food for fattening beasts and milch cows. The excrement of these animals returns to the soil in an altered and prepared form, nearly the whole constituents of the preceding crop, thus furnishing to a new one materials out of which it may be re-produced; the only loss sustained being those portions carried off the soil in the grain, fat cattle, and other commodities sold; these however, can be replaced, either by manures or the extra food bought in. In a system of this kind, the great matter is to have the stock of beasts kept on the farm, in a due proportion to the food upon which they are to be fed; for whenever that food falls under what is requisite for keeping those animals in a healthy growing condition, a loss is sustained equal to twice the amount of the food that would have been necessary for a full supply.

"In those parts of the country where farming has been reduced to a system, the whole operations are necessarily carried on much more expeditiously and cheaply than others where no plan has been organized, and where it is a matter of chance more than rule what operations should succeed each other. When all the parts of farm work are properly apportioned, and each man knows what he has to do, and expected to perform, the work goes on with the regularity of a machine. time is economized, and the work is executed in a proper manner. Again, it is a matter of some moment to a farmer, to have a considerable variety of crops growing on his farm, because by being wholly dependant upon one particular crop the risk of losing is very much increased. Many extensive potato and wheat growers have been ruined by failures of these crops: [The truth of this remark, made two years ago, has been illustrated with awful force in the distress of millions, and the actual death of more than fifty thousand of the inhabitants of that unfortunate country. Let us take warning.—The farmers of Canada are directing their attention too much to the production of one crop, wheat. A combination or coincidence of such accidents as a bad winter, the Hessian Fly, the grain worm or weevil, rust, and an influx of 200,000 starving emigrants, may teach us too, a fearful lesson.] besides, the constant cultivation of any particular crops to the exclusion of all others, necessarily exhausts the soil and impairs its powers of production.

"Another point worthy of notice in systematic farming is, the absence of all useless fences, wide ditches, and unnecessary open or cleavage furrows. When a good farmer gets possession of one of these patch-work farms, his first employment is to root up all these unseemly crooked, and worse than useless fences, and to lay out the land in neat suitable-sized fields, having as few nooks and corners in them as possible, so that the plough may have access to every portion of them: when this has been accomplished systematic farming may be said to have commenced. The loss sustained by useless fences and ditches has been made a matter of calculation in various parts of England; and a writer, Mr. Grant, in the last number of the Journal of the Royal Agricultural Society of England, has made the following calculations of the ground occupied by hedges in ten parishes in different counties in England:—

"'The result of the examination of ten parishes, containing 36,976 acres, being an average size of about 3,700 acres, is, that there are 1651 miles of hedge: about half as long again as the famous wall of China; or sufficient to hedge round the whole of England with an immense bank of earth, and occupying 2,642 acres; being 1 1-7th per cent, or one acre in 14.'"

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PULVERIZING THE SOIL.

To demonstrate that dews moisten the land when fine, dig a hole in the hard dry ground, in the driest weather, as deep as the plough ought to reach; beat the earth very fine, and fill the hole therewith; and after a few nights' dews you will find the earth become moist at the bottom, and the hard ground all round will become dry. Till a field in lands' make one land very fine by frequent deep ploughing, and let another be rough by insufficient tillage alternately; then plough the whole field crosswise in the driest weather, which has continued long, and you will perceive, by the colour of the earth, that every fine land will be turned up moist, but every rough land will be dry as powder from top to bottom. In the driest weather, good hoeing procures moisture to roots; though the ignorant and incurious fancy it lets in the drought, and therefore are afraid to hoe their plants at such times.

There is yet one more benefit hoeing gives to plants which by no art can possibly be given to animals; for all that can be done in feeding an animal is, to give it sufficient food at the time it has occasion for it; if you give an animal any more, it is to no manner of purpose, unless you could give it more mouths, which is impossible. but, in hoeing a plant, the additional nourishment thereby given enables it to send out innumerable additional fibres and roots; so that hoeing, by the new pasture it raises, furnishes both food and mouths to plants.—[Tull.

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Brittania Ware should be first rubbed with a woollen cloth and sweet oil; then washed in water and suds, and rubbed with soft leather and whiting. Thus treated, it will retain its beauty to the last.

Tar for greasing waggons, we think an absurd article. In the hottest weather it soon gums up and becomes adhesive, and in cold weather is always so. Wherever iron axle-trees are used, *black lead* mixed with grease is best.—or *Flour* mixed with *Lard*.