# THE FARM.

## How a Simcoe County Farmer Grows Clover.

Editor "The Farmer's Advocate." :

With us clover is the basis of all our farming operations, and is by all odds the most important, if not, the most valuable crop we grow. This is true for three reasons: First, it yields a large amount of excellent stock food, without which it would be impossible to feed cattle and sheep to any profit; Second, the roots and stubble and the whole crop, where we plow it down, adds to the humus and the nitrogen in the soil, and in this way increase the yield of other crops grown; Third, it reduces the amount of cultivation required to keep the land clean, by occupying the soil after other crops have been removed, and thus preventing weeds from getting a start. These three advantages of the use of clover are so well understood that they need no explanation.

We follow a regular four-year rotation, as follows: first year, clover; second year, oats; third year, corn, roots and peas or rape; fourth year, barley and wheat seeded down. We make a variation in this rotation where circumstances warrant it, by seeding the second year with the oats in preparation for corn. The land thus seeded is manured during the winter if possible, and the clover allowed to grow till about May 20th when it is turned down with the manure, the land worked fine on top and planted with corn. This makes a very excellent preparation for corn particularly on heavy-clay land, and assists greatly in building up the soil and enriching it, as well as improving its physical condition.

In a regular way we seed down with fall wheat and barley. These are the best grain crops to seed with because they are got off the land early, and so allow the clover a good chance to grow a good top before winter sets in. The mixture we use is six lbs. red clover, one lb. alsike and two lbs. timothy per acre, except in the case of clover that we intended for seed, when the alsike is omitted. My experience is that this is quite enough seed where the land is in good condition, and will produce a better crop than where more seed is used. It is quite possible to seed too thickly even with clover, and I have seen instances where the plants appeared to be too thick, and were spindly and short in consequence. Of course, if your land is poor or in other respects out of condition, it would be wise to use a greater quantity of seed. I like a little alsike and timothy with the red clover, because the mixture makes finer and sweeter hay than where red clover alone is used, and also because the alsike and timothy are more resistant to frost than red clover, and where unfavorable winter or spring weather kills the red clover in patches these remain to hold the land.

In seeding with fall wheat we sow broadcast as soon as the ground is dry enough, and follow with a stroke of the harrow. We used to sow the timothy with the wheat in the fall, and broadcast the clover before the frost was out of the ground and even on the snow. This gave good catches of clover and timothy, but, of course, it was not possible to harrow the wheat in the spring. The harrowing is undoubtedly good for the wheat, so we sow later and harrow the seed in.

In seeding with oats or barley we sow as early as possible in the spring having the ground in as fine tilth as possible, and sowing in front of the discs following by a stroke with the harrows. The oats are sown at the rate of six pecks per acre, and the barley five pecks. We get good catches with both grains.

I do not approve of pasturing the young clover closely in the fall, or with heavy animals at all. The hoofs of cattle destroy more plants than their teeth, and I never allow them on the young clover at all. If there is a good growth of top I pasture with lambs, but not closely. Some claim that lambs or sheep will bite the crown out of the clover plant. My experience is that they will not do so unless they have first eaten all the leaves. They will not injure the clover as long as it is not pastured too closely, and they are too light to injure it by tramping. Perhaps the chief injury from lambs is due to the habit they have of making beaten paths around the edge of the field, but this is inconsiderable.

We have had but one failure to get a catch in the last twelve years. That was, I think, 1906, when a drouth and hot weather after harvest burned the young plants up.

Simcoe Co., Ont. E.C.DRURY.

## Lightning and Lightning Rods.

Prof. W. H. Day, of the Department of Physics, of the Ontario Agricultural College, has been collecting reports on the damage done by lightning for the past eleven years, and has found that of all buildings reported struck 1·55 per cent. are burned, whereas, of buildings properly rodded, only one in six was burned or a little over 16 per cent. Thus it is seen that an unrodded building if struck is more than three times as likely to be burned as a rodded one struck.

Considerable work was done during 1912 in connection with various mutual fire insurance companies in Ontario to prove that lightning rods have a very important function in the prevention of strokes. Eight of these companies were all that were able to furnish reports complete in every particular. Although the first six companies insured 5,613 barns, the number rodded being 1,538, which makes 27.4 per cent. twelve barns were burned, among which there was not one that was rodded. These same companies had 72 barns damaged, of which one was rodded. Five companies insured 4,023 houses, the number rodded being 592, which makes 14.7 per cent. Three houses burned, of which none were rodded, and thirty-four were damaged of which one was rodded. The last two companies insured 1,008 barns and houses combined, the number rodded being 122, making 12.8 per cent. These two companies had four buildings burned and ten damaged, with not a rodded one amongst them. Taking the whole eight companies together they insured 10,644 buildings, the number rodded being 2,252, which makes 21.1 per cent. As these companies renew their risks every three years, the total number of rodded and unrodded buildings insured is probably about three times the figures just given. They had nineteen buildings burned of which one was rodded. Adding the burned and damaged buildings together we see that these companies had 135 buildings struck by lightning, of which only two were rodded, which makes 1.5 per cent.

Of the buildings insured by these companies last year 21.1 per cent. were rodded. This may be taken to represent fairly accurately the percentage of rodded buildings in the territory covered by these eight companies. If the rods had no effect one way or the other, we would expect that 11.1 per cent. of the buildings struck would have rods on them. For every 79 unrodded buildings struck, we would expect also to find 21 rodded ones struck: and for 133 unrodded 34 rodded ones would be due to be struck, but only two were actually struck. Are we not justified in saying that in all human probability the rods prevented strokes on 32 out of 34 rodded buildings?

Or, looking at it another way, out of every 7,000 unrodded buildings insured by these eight companies 37 were struck by lightning, while out of every 7,000 rodded ones only 2 were struck. Are we not therefore justified in saying that unrodded farm buildings are more than 18 times as likely to be struck by lightning as rodded ones? These reports covered all kinds of rads in use in Ontario. From this we are led to believe that lightning rods are a potent factor in the prevention of strokes.

These points are taken from an address delivered by Prof. Day before the Mutual Fire Underwriters, and while dealing with it he again emphasized a number of points in the construction of lightning rods, which readers constructing such would do well to note.

1.—Ground Wires: For an ordinary building not an "L" or "T" two ground wires could be used, preferably at corners diagonally opposite from each other. These ground wires should be sunk far enough into the earth that they are always in perpetual moisture. On an "L" or "T"-shaped building there should be three ground wires, in other words there should be no "dead ends" in the system. The owner should be present and personally see that the ground wires are actually put down not less that eight feet in ordinary soil, and more in light soils.

2.—Cable: Beginning at one "ground" the wire should extend up the corner, make a gradual turn at the eaves, go up the edge of the roof to the peak, along the peak to the other end, down the edge of the roof to the eave, and down the corner to the other "ground." All turns should be rounded rather than angular.

3.—Points: At intervals along the ridge uprights should be placed with points that will not corrode. On these uprights ornamental devices of one kind or another, such as bright balls, are frequently placed. It has been stated by three different companies manufacturing rods in Ontario that these fixtures are only ornamental, and that they are of no use in telling whether a building has been struck by lightning or not.

4.—Attachment: The rods should be in metallic connection with the building. Metal clips, which surround the rod and may be nailed to the building, are used. It is considered best practice to have these clips so made that they hold the rod about one inch out from the building. The reason for this is that if the rods are placed so that they lie flat against the building there is danger of inflammable material such as straw, chaff, etc., collecting between the rod and the building. Should the rod become highly heated with a flash, this inflammable material would be likely to catch fire. With the rods held out about one inch there is not much likelihood of this occurring. This method of attachment is in direct opposition to that practiced when lightning rods were first used. It was then considered desirable to insulate the rods from the building by glass or earthenware insulators. In a thunderstorm the entire outer surface of the building is charged by electricity, and by having the rods in metal connection with the building the charge is conducted by the metal to the rods, and thence to the point where it leaks off and neutralizes the opposite charge existing in the cloud, thus preventing strokes. When rods were first introduced their preventive function was overlooked, and consequently insulators were advised.

5.—Material: For a long time copper was considered the only material for lightning rods, the reason being that copper conducts a steady current of electricity six times as well as iron, the only other material then considered a competitor. However, between the years 1888 and 1892 Sir Oliver Lodge carried on an investigation of the phenomena of lightning, and to his surprise, as well as to that of many scientists and the whole lightning-rod fraternity, he found that an iron will carry off a sudden rush of electricty better than a copper of the same size. Every discharge or current of electricity induces an opposite current along the same path. This is known as "self-induction." This self-induction acts as a resistence to the current. While iron has greater resistence to a steady current than copper, yet the self-induction in the iron is much less than in copper in case of a flash of lightning or an electric spark. Basing his judgment on this fact, Lodge considered and stated that, in his opinion, the day of copper lightning rods was done, although he added, as a rider, that in cities and towns where coal was burned, he thought the iron rods would not prove durable owing to the action of the fumes upon the zinc coating of the galvanized wire. I am inclined to think that even in the country the question of durability is an important one. Galvanizing is sometimes poorly done, and even if well done corrosion takes place wherever the rods are cut, e. g., at the ends or wherever the rods are scratched. The same does not apply to copper wire.

But it seems to me that in this judgment Lodge paid attention almost entirely to one duty of lightning rod, namely, to carry off the flash in case the building is struck. Judging from the reports above presented. We have seen the lightning rod has another and a greater duty to perform, namely, the prevention of strokes from occurring. To prevent a stroke there must be a gradual flow of electricity along the rod to the point and into the air. Now for steady current copper is six times as good a conductor as iron, hence, for preventing strokes copper is the best. Taking into consideration the question of durability, I am inclined to believe that, on the whole, copper is a somewhat better material for rods than is iron. However, there is little doubt that a building rodded with iron rods is protected in a very large measure, as indicated by the fact that our reports cover all kinds of rods.

6.—Metallic Bodies in Buildings: Lightning-rod companies here vary somewhat in practice. Some connect all metallic bodies to the lightning rods, others do not. I am inclined to think the former is a better practice. If the metal body is a long one like a steel track it would probably be best to attach it to the system at both ends.

7.—Systems: All the cables on a building should be connected in one system. Sometimes it is found that on a "T"-shaped building, for instance, the rods on the one part are not connected with those on the other part. Numerous instances are reported where damage has occurred between these two systems, the lightning striking the one system and part of it jumping across to the other. Consequently, divided systems should be scrupulously avoided.

## Does Not Harrow after Drilling.

Is it best to harrow a grain field after drilling? John Hunter, the well-known stockman of Lambton County, Ont., believes not, and, discussing the point in our office the other day, assigned reasons based on many years' observation and trial. When the land is not harrowed the grain is, of course, in a shallow furrow made by the drill disk or hoe. It comes through more quickly and uniformly than if harrowed. Then in the case of fall wheat the gradual weathering down of the ridges between the rows