## THE FARMER'S ADVOCATE.

## A Four-year Rotation.

Editor "The Farmer's Advocate"

I take the liberty of sending you a few notes, as requested in an editorial of a recent issue of your paper, on the subject assigned. I shall endeavor to give in this article something of an outline of the rotation followed by many in this county, where dairy produce is the principal output, and where clean and fertile fields are not uncommon. We do not all follow the same rotation, for no rotation could be planned that would be applicable to every farm of a township, or even community, let alone a whole county. There is no hardand-fast rule of rotation, and I think it was realizing this that "The Farmer's Advocate" encouraged this discussion, and realizing this we shall profit thereby. I said there were reasons why we should follow a rotation. Allow me to submit a few, which I think will make it evident.

First, while all farm crops are made up of the same chemical elements, the proportion in which the different crops use these is different. The range of roots and the power of assimilating plant food differs in different crops. For instance, wheat derives most of its plant food from near the surface, while the clovers get much of theirs deeper down. By a rotation we are able to frequently grow a leguminous crop, especially clover. The growing of cereals or roots continually, tends to exhaust humus and nitrogen, and the benefit of a rotation as a means of keeping up humus and nitrogen cannot be overestimated. Again, rotation is a means of destroying weeds and fungi, and this is of great importance. In growing any crop continually, fungus diseases and certain weeds often become very troublesome. Rotation will give you from a field the largest total amount of nutrients, and a rotation lessens the risk of the farmer. The conditions of any one year will not affert all of his crops; and, further, a rotation enables a farmer to distribute his work much better over the year. I think we have ere this grasped the importance and value of rotation, and I think in planning one we should plan with these objects in view : First, bringing in clover as frequently as possible; second, the alternation of grain with grass crops; and, third, the alternation of cultivated or hoed crops with unhoed crops with a view to fining the soil and to destroying weeds

Conditions sometimes render it difficult or impossible for one to follow such a rotation as one would like, or to follow it as regularly as one would like. Such is our experience in managing our farm, as we have a great deal of permanent pasture. Now, by rotation, I do not mean simply a change, but also a change in the regular order, and there is no mistake in this, as I do not think it advisable to stick too closely to a rotation. Do not be afraid to violate once in awhile to destroy weeds in parts infested, or for other reasons, if you would have the greatest measure of success

The rotation I am going to outline, and the one we follow on our farm as near as practicable, is a fouryear rotation, and I consider this long enough. To start with a clover sod or pasture, we plow this very shallow, and turn sod well under as early as we can in August or September, and then practice a thorough cultivation on this throughout the fall months. This hastens the rotting of the sod, and is very effectual in killing many troublesome weeds. We endeavor throughout our methods of cultivation to save all humus and surface soil, and keep this near the surface and away from the cold, hungry subsoil. This land is intended for hoed crops the following season, and upon it we spread all manure available in the fall and throughout the stabling season, for we always try to have an area large enough to take all the manure made. In the spring this land is plowed very shallow with a wheel plow, the object sought being to thoroughly incorporate the manure in the surface soil to render subsequent cultivation necessary in seeding easier and more effectual The growing crops are carefully cultivated throughout the summer, the soil stirred deep at first and shallower as the crop progresses. Here is where we  $destr_{0y}$  the weeds. After harvesting this ground is plowed again, as we find it essential in order to prepare a seed-bed of good tilth and depth in our soil, and we have failed as yet to notice any detrimental effects in loss of humus or fertility by this plowing. The following spring we seed to grain crops, oats and barley, and a heavy seeding of timothy, red clover and alsike clover. On this crop the only way to destroy weeds after seeding is by hand pulling, which is sometimes resorted to, in case of sow-thistle or mustard. The next year we cut the grass crop for hay, and a fine cut it generally is, aver aging often three tons per acre, and when properly cured makes very desirable fodder; and then the clover aftermath is a crop of no little importance in this year's rotation, as it affords a great deal of excellent pasturage throughout the fall months for the dairy cows. The fourth year we pasture again, or if the pasture is not needed we take a second cut of hay and plow in early fall, and cultivate as I have previously explained. By this system of rotation our land receives a liberal dressing of manure every fourth year; we are afforded an opportunity to combat with weeds every fourth year in a hoed crop, besides the cultivation in the fall months, besides the smothering from the crops of clover, as our land is seeded to clover every fourth year, and fertility added from this source. We find this system to give satisfaction on a dairy farm; we have an abundance of roughage, our pastures are always good, and farmyard manure is plentiful. As a result, weeds are being eradicated, fertility increased, and, consequently, our returns, so we are satisfied. As I have said before, however, a rotation cannot be laid ber ?

down that will be applicable to all farms, and, further, let me repeat, one must not be afraid to strike out from the general order of the rotation once in awhile if best results would be had. Dundas Co., Ont. CLARK HAMILTON.

## The Split-log Drog.

During the past year or two widespread interest has been aroused in the United States in a simple roadmaking implement called the splitlog drag. It is intended to be used when the roads are muddy, the idea being to puddle them so they will dry up with a smooth, compact surface. The object is thus entirely different from that of the old-fashioned road leveller, which is not used until the surface is dry enough to be friable, by which time the worst stage of the



The old-fashioned road-leveller was road is past. an invaluable implement, however. Of the splitlog drag we have had no experience, nor have we had the privilege of seeing one used, but great claims are made for it, and the reasonableness of the plan and the inexpensiveness of the implement make it worth a trial. It is thus described by the inventor, D. Ward King, of Missouri

The two halves of a split log, ten to twelve inches thick, are set on edge thirty inches apart, both flat sides to the front. The cross-pieces are strong oak or hedge bars, the ends of which are wedged in two-inch auger holes bored through the In other respects, the cut is self-explanaslabs. If working a clay or gumbo road, it is tory. advised to put iron-old wagon tire, or something of the sort-on lower edge of drag at end of six months ; for softer soil, at end of twelve months. For further particulars about this drag and its uses, read the following by the inventor himself :

From the outset of this work, so many questions have poured in upon me indicating points concerning which the public is prone to go astray in its understanding of how to build and use the split-log drag, that I have prepared the following road-dragging "catechism," as covering, with fair completeness, the main working facts in the

Because drags so made have a tendency to slip over the bumps

Don't you grade up the road first ?

The grading is done with the drag. No. gradually. By so doing, the road is solid all the time, and is built on a solid foundation.

What does it cost to drag a mile of road a year ?

The cost is variously estimated at from one to three dollars

How do you keep the drag from dodging around sidewise ?

By not loading it too heavily. If a drag dodges around the earth you are moving, it is because it is overloaded.

Will the dragged road stand heavy hauling ? Yes and no. A dragged road will stand more

heavy hauling than an undragged road, but not so much as a macadamized or well-kept gravel road

Will a drag help a sand road?

A sand road is a very different proposition from the black soil, clay or gumbo. An entir different method must be adopted. Three things may be done to a sand road to make it better First, keep it wet; second, haul clay on to it; third, sprinkle it with crude oil, as they do in California and in some parts of Southern Kansas and Texas. The drag will be beneficial in keeping the sand road perfectly flat, so that it will absorb moisture and retain it a long time

To this catechism I would add the following "Don'ts ": Don't drive too fast. Don't walk get on the drag and ride. Don't he particular about material; almost any log will do. Don't try to drag with only one piece ; use two.

## Spring Cultivation.

Much depends upon the proper cultivation of the soil preparatory to the spring seeding, and a little discussion of this feature of farm operations is seasonable at this period. As a rule, the land intended to be sown with spring crops has been plowed in the fall, in order to give it the benefit of the action of winter frosts, rendering the soil more friable and easily reduced to a fine tilth in the preparation of the seed-bed

There is generally little difficulty in securing this condition of the land at the beginning of the seeding operations, the land being then sufficiently moist to break up into a fine tilth without much labor; but later in the season, if the weather continues dry for a considerable time, the moisture, especially in the case of clay lands lacking in humus, rapidly escapes by evaporation, leaving the land dry and hard, requiring extra time and labor in the cultivation, while, from the lack of sufficient moisture, germination of the seed is delayed, and the crop is liable to be crippled in itsinfancy and the yield much reduced. By anticipating this condition, there is a way of preventing it, and the principal difficulty in its adoption is the general scarcity of farm help and the commendable ambition to push the seeding to completion as early as practicable. The method we have in mind is the harrowing or light surface cultivation of the fields before the land becomes too dry, thus securing a loose-earth mulch to prevent the evaporation of moisture and keep the soil in an easily-cultivatable condition.

While this suggestion may not be considered practicable in all cases, owing to the objection that water furrows would be filled in, preventing drainage in case of heavy rains coming, it might, adopted partially; that is, upon the higher portions of fields which are liable to become dry and hard before the lower levels are sufficiently dry to cultivate. It not infrequently occurs that the lower parts of a field are not dry enough to work, and, while waiting for these to dry out, the higher portions may be well harrowed or cultivated, thus economizing time, conserving the moisture in the land, and ensuring a more uniformly good crop on all parts of the field. Another suggestion that may be worth consideration and a trial, is the harrowing of spring grain on those high and dry places after a heavy rain has packed the soil closely, and it is liable to become crusted when dried out, shuttiout the air, and binding the plants in a brick-how encasing. If such parts of a field liable to bake were harrowed soon after a rain, even after the crop is well above ground, the loosening of the land and admission of air would give vigor to the plants and conserve moisture by means of the earth mulch, that would go far to ensure a good crop. The objection will no doubt be raised that where clover seed has been sown and has germinated the plants would be destroyed, which may be true to some extent, but the question may be raised whether more of the plants would be destroyed by harrowing than would be smothered or choked by the crusted and scaled surface, if

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Would it not be better to plow the road before dragging ?

Plowing gives a soft foundation. Plow-No. ing the middle of the road is a relic of the old dump-scraper days

What do you do when there are deep ruts in the road ?

Drag them. If you drag when the surface quite loose and soft, you will be surprised how soon the ruts disappear.

How do you get the dirt to the middle of the road?

By hauling the drag slantwise, with the end that is toward the center of the road a little to the rear of the other end.

But suppose the road is too narrow?

First drag the wheel tracks. After three or four rains or wet spells, plow a shallow furrow just outside the dragged part. Spread this over the road with a drag. Only plow one furrow, You may plow another furrow after the next rain. At each plowing you widen the roadhed two feet,

How many horses do you use?

Two, generally; three if it is just as handy four when breaking colts-a good solid team in the center, and a colt on each side ; two men on the drag, one to drive, the other to control the

How do you drain the road?

If the earth is pushed in the middle of the road continually, the road will drain itself

Why not wake the drag out of plank ? You can, and do good work : but the split log is the best. The plank drag is not so still Why not make the drag of heavy, sawed tin,

It may be well worth while to experiment on a small scale, at least in a case of this kind. It s generally conceded to be good practice to harrow fall wheat in the spring, and to harrow corn after the plants are above ground. The writer has harrowed peas after germination, on a hilltops after a rain, with excellent results, and has

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