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top, so as to prevent from falling down. Husk by hand if you can get the help, for it is a much nicer job when finished than when it is done by machine. The shredder shells corn and leaves a lot of husks on the ears, and, besides, the stalks keep better than the fodder, for it generally heats and moulds.

Where once the stately forest trees Their waving branches spread, We now look o'er the smiling land, And see corn fields instead.

*From an essay by James D. Dunlop, age 11, Union School Section No. 1, Chatham and Camden, Kent Co., Ont., winner of silver medal given by the Kent Farmers' Institute at Corn Exhibition, Chatham, Jan. 31st to Feb. 3rd, 1911. The competition was popular. Nearly every school in the West Kent Inspectorate contributed essays.

Crop Rotation: What, Why, and How. WHAT ROTATION MEANS.

Public experiment and private experience combine to prove the marked advantage of crop romaximum yields, while at the securing same time cleaning the land of weeds (or keeping it clean), combating insect ravages, and building Crop rotation is no new thing, up fertility. neither is it difficult to understand. It simply implies a systematic change of crops on each field, according to some definite and recurrent plan. Once started, it is as simple as one, two, three. To commence a rotation, one makes a mental survey of his farm, deciding what part would be best the coming year for corn and other hoed crops, what part for grain, and what part for meadow. Then, having divided his arable land into three or six, four or eight, five or ten, fields, according to the rotation he proposes to follow, he commences with a different crop on each field, but subsequently follows the same order on each, so that he has every year on one field or another a reasonable area of every kind of crop he wishes to grow. Barring disturbances due to seasonal adversities, it runs with the regularity of clockwork. Once started, it runs itself. To be sure, there will be occasional upsets, due to such causes as failure to secure a catch of clover. In these circumstances a man must use his wits, striving to improvise some arrangement or substitute some annual crop which will enable him to tide over the break without throwing out his whole plan of rotation. It is worth noting, in this connection, that the improved soil conditions resulting from a proper system of rotation go to reduce the chances of sure; and if one follows the very wise exsuch i. Prof. Grisdale, of Ottawa, using large ampl of clover and grass seeds, his chances quant a catch are reduced to a minimum; of m another direct result of this policy of while ding, he will obtain surprisingly large, liber. of fine hay. It is worth making a even al effort to avoid failure of the catch of very ause this is about the only cause that seed ly embarrass one in his attempt to adcan here definite rotation.

THE FARMER'S ADVOCATE.

REASONS FOR ROTATING CROPS.

We have defined the main objects of crop rotation as being to secure maximum yields, keep the land clean of weeds, to combat insects, and to build up fertility.

As to the first and last, we have seen run-down farms built up wonderfully in six or eight years by the practice of a three-year rotation. The frequent growing of clover is largely responsible for this, but, in addition, it is found that a threeyear or four-year rotation provides each important crop with the conditions favorable for maximum development. For instance, the vegetative crops, those grown for their root and stalk, as turnips, mangels, potatoes, corn, rape, etc., make specially good use of the nitrogen and humus resulting from the decay of a clover sod. This is due not only to the nature of their plant-food demands, but also to their late season of growth. A grain crop is harvested too early to derive full benefit from the decaying sward, and much of the nitrogen in the inverted sod is being liberated at a time when the requirement of the cereal would be better met by less nitrogen, and a more abundant supply of phosphorus to develop the seed or grain. Another reason that the cultivated crops make better use of a sod is that the summer cultivation given them helps to rot the sod; while, when grain is sown after sod, more or less grass is liable to grow up and hinder the growth of the crop. To get the best results,

Wood Lot	Alfalfa
Rough Pasture FIELD.4. IST Year Roots, Rape, Forage (rops& Peas or Mixed Grain 2ND Year Grain 3PD Year Grain 5TH Corn 5TH Corn 5TH Spring Grain 6TH Hay& Pasture FIELD.5. IST Year Grain 2ND Hay& Pasture Corn	FIELD.3. IST Year Hay & Pasture 2ND - Roots Rape, Forage (rops & Peasor Mixed Grain 3BD Year Grain 4TH - Hay & Pasture 5TH - Corn 6TH - Spring Grain 2ND - Hay & Pasture 3BD - Noots, Rape, Forage Crops & Peas or Mixed Grain 4TH Year Grain 5TH - Hay & Pasture
4TH Spring Grain 5TH Spring Grain 5TH Hay& Pasture GTH Roots, Rape, Forage Crops& Peas or Mixed Grain FIELD.6. 1ST Year Hay& Pasture 2ND Spring Grain 4TH Hay& Pasture 5TH Roots, Rape, Forag (rops& Peas or Mixed Grain	614 Corn FIELD.I. IST Year Corn 3RD Spring Grain 3RD Hay& Pasture 4TH Rools, Rape, Forage Crops& Peas or Mixed Grain 514 Year Grain 614 Hay& Pasture Buildings, Garden and Orchard

inter-tilled crops, will deny the efficacy of this method. It will subdue almost any weed that grows in Eastern Canada, with the possible exception of bindweed and perhaps one or two others of our most noxious perennials. We are not sure but that it would subdue bindweed, and propose to give it a trial this summer, if convenient. A corn or root crop is but little more expensive to cultivate than a bare fallow, while the returns repay all the labor, pay for the rent of the land, and yield a snug profit, besides. Fallowing by use of intercultivated crops is sound economy.

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Likewise, a rotation such as described above, is the best known means of controlling ravages of such injurious insects as wireworm and white grub

EXPERIMENTAL EVIDENCE.

If experimental evidence is desired to prove the advantage of rotation, we have it in plenty. For example: Wheat grown at the Minnesota Experiment Station continuously on the same plot since 1894, shows an average yield of 18.6 bushels per acre since 1900. Grown in three-year rotation since 1900, the average yield has been 20.6 bushels per acre. No manure being given the plot, the increase must be credited alone to rotation, the seed and other conditions being substantially the same.

Corn grown at the Experiment Station continuously on one plot since 1894, has given an average yield since 1900 of 24.4 bushels per acre. In a three-year rotation of wheat, clover and corn, the corn yield has averaged 45.2 bushels per acre since 1900, showing a difference of over 21 bushels increase, due solely to rotation.

CHOOSING A ROTATION.

The desirability of a rotation being admitted, the question that follows is what one to adopt? In deciding this, one should consider his farm and system of farming. First of all, let him elimi-nate from his rotation area any land too rough to work advantageously. Three things may be done with this area. Very rough or rocky areas may be planted to trees, which are often the most profitable crop to grow on such soil. Land that s adapted to produce pasture may be devoted to this latter purpose, being broken if feasible, and seeded with a regular permanent-pasture mixture, as Prof. Zavitz recommends. Even if there is no rough land, it may pay very well to seed down a back field this way, allowing the live stock to manure it and harvest the crops. Land that is too steep to plow very often, but not too steep to mow, is usually ideal for seeding to alfalfa,

to hrow, is usually hear for bounds to unlarry to be cut for green feed or hay. Having thus disposed of the inarable area, it remains to be considered what quantities or proportions of the various field crops can be grown and utilized to advantage on one's farm. This will depend a good deal on the number and kind of live stock kept. Without offering any comments here, save the suggestion to farmers in corn-growing regions to grow plenty of that very profitable cleaning crop, we proceed to remark that the rotation one chooses will be decided largely by the relative proportions of hay, grain and hoed crops that he desires to grow on his farm. Everyone, therefore, must work out his

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Fig. 2.—A Rotation within a Rotation, amounting practically to a Six-year Rotation on the three-course principle.

then, with hoed crops, especially with corn and potatoes, they should be planted on inverted sod. A partial exception might be made in the case of the roots, which do not prefer a tough grass sod, though on a friable clover sod they will do well, and for various reasons it is best to have them come in the same order of cropping as the corn.

Not only does an inverted sod provide most favorable conditions for most of our hoed crops, but the cultivation given these brings the land into that fine state of tilth desirable for grain crops, which should usually follow the hoed crops, without any further plowing of the land. So we have favorable conditions provided for two crops. Furthermore, the land is now in ideal condition to seed down to clover once more. As a rule, it is better that no field should be out of sod for more than two years at a time, and, conversely, it is usually better not to leave any in meadow hourd, grassy and mossy. "Seed often and break often," should be the motto. Thus we get the benefit of frequent clovering, which enriches the soil in nitrogen and humus, renders it friable, and opens up the subsoil by its taproots. Rotation conserves fertility in the best modern sense. It is also believed by scientists to minify the development of certain fungoid and toxic influences which lessen thrift and reduce yields when a certain kind of crop is grown year after year on the same soil.

No one will deny the advantage of keeping our farms free of weeds, and no one who has tried cultivating thoroughly a field of corn or other

Permanent Pasture	Wood Lot
FIELD.4. IST Year Hay& Pasture 2ND - Corn, Roots, Miscellaneous Forage Crops and peas, or Mixed Grain 3RD Year Grain 4TH - Hay 5TH - Hay& Pasture 6TH - Corn Erc.	FIELD. 3. IST Year Hay 2ND - Hay Pasture 3RD - Corn, Rooks, Miscellaneous Forage Crops & peas or Mixed Grain 4TH Year Grain 5TH - Hay Pasture
FIELD.2. IST Year Grain 2ND Hay 3RD Hay 4TM Corn, Rools Miscellaneous Forage Crops and peas or Mixed grain 5TM Year Grain 6TM Hay	FIELD.I. 15T Year Corn, Rooks, Miscellaneous Forage Crops and Peas or Mixed Grain 2NP Year Grain Seeded to Clover and grass 3RP Year Hay 4TH - Hay & Pasture 5TH - Corn, Roots Etc 6TH - Grain Seeded Dow
Hillside seeded with Alfalfa	Buildings and Orchard

Fig. 3.-Four-year Rotation.