

pasture. The sod is broken for oats and wheat in the fall, and early in the spring following three bushels island black oats are sown as early as the ground is fit to work, well broadcast and harrowed in with the spring-tooth and disk harrows. If wheat is sown in the broken sod, instead of oats, one and one-half bushels White Russian is sown about the same time and harrowed in the same way. Have not grown much peas, but think next spring of withholding about half the quantity of the seed oats and supplying its place with peas, making the seeding one and a half bushels oats, and one and a half bushels peas, and covering the peas with the Acme harrow, as we find peas sown broadcast difficult to cover with ordinary harrows. The pea crop is harvested for grain about last of August, and as soon as the field is cleared the ground is immediately plowed for the coming root crop, harrowed, and allowed to thus remain in *statu quo* for the manure, which *should* (but is not always done) be thrown out during the winter and spread on the snow; otherwise the manure is drawn out in spring and spread at once, and, for turnips, plowed under quite shallow, and allowed to remain thus till about June 1, receiving, however, several harrowings in the meantime. About this time, when all other small grains are in the ground, this land intended for roots is plowed deeply, harrowed, and drilled lightly, and the seed is sown at the rate of two pounds per acre. The root land is plowed in the fall soon after the roots are gathered, and in the following spring in this locality the wheat is sown from May 20 to 25, broadcast, at the rate of one and a half bushels per acre, and harrowed in with disk and spring-tooth float harrows, and immediately rolled. Now clover and timothy are sown. With regard to the amount clover seed sown per acre, we sow as many pounds as we think we can afford to get, as it often costs fourteen cents per pound, the error always being that we do not sow enough of clover seed. The clover and grass seed is covered by a single scratch of the harrow. Whether it is better to plow the root land in the fall or delay the plowing till spring is with the writer an unsettled question. Our principal reason in plowing in fall is to hasten spring work, but I find many good farmers in these parts do not plow till spring, and by so doing they expect a better stand of grass by placing the small seeds in the mellow earth. Since the introduction of the White Russian variety of spring wheat, which does best when sown moderately late, and is the heaviest and most reliable of all spring wheats, spring plowing the land is all right, because the land may be plowed the first week in May and allowed to stand till the 20th, when the wheat is sown. All things considered, when White Russian seed is used, and for the good of the grass and clover, spring plowing of land is best. With the Fyfe varieties, spring plowing of the land is not so convenient, because the Fyfe varieties require to be sown early. The Fyfe is the better milling wheat, but the Russian is the better cropper. The introduction of the White Russian has saved the importation of thousands of barrels of flour to this Province. Campbell's White Chaff is a variety that is fast ingratiating itself into popular favor.

On the land remote from the barn, where no barn manure is ever drawn, we adopted a 4-years' rotation, thus: First year, oats; second year, barley, seeded to clover and timothy; third and fourth years, hay and pasture. The preparation is the same as for roots. The oat stubble is plowed in the fall, and again in the spring, and common six-rowed barley sown broadcast at the rate of two bushels per acre. I am not satisfied with this rotation, and am constantly making changes. Last year we grew our roots in a one year clover and timothy sod, but this year we will not be able to do so. I am not at all favorable to an oat stubble for growing roots; it requires oceans of manure. I particularly favor a one-year-old clover sod for a root or corn crop. I am in favor of a straw cutter to cut all straw for bedding cattle, horses, sheep, and swine, and throw the manure out daily or weekly, as made, and the ideal place to put this daily and weekly drawn manure is on the ground that is to be seeded to clover with a nurse crop and some small grains that is to be cut before it is mature—for hay and green feed. Let the barnyard manure be used to grow a crop of clover, and the clover in turn will manure the next crop.

#### Rotation and Cultivation at the Ontario Experimental Farm.

Our rotation of cropping at the Experimental Farm, Guelph, is a four years course. Instead of having the farm cut up into fields, as formerly, the cross fences have been removed and it is now divided into four sections. The rotation is as follows: First and second years, hay and pasture; third year, corn, roots, potatoes, rape and peas; fourth year, fall wheat and spring grain seeded down. The portion required for pasture is fenced off with a portable fence, which is removed in the fall (see illustration and description elsewhere in this issue. No fence is required in the third year, as the section is in hoed crop; neither in the fourth year, as it is then in grain.

During summer and early fall, the second year sod land is plowed (three to four inches deep) and immediately harrowed to conserve moisture and hasten decomposition, the essentials for which are heat, air and moisture. Shallow and thorough cultivation during the early fall will clean the soil of perennial weeds, destroy weed seeds, and by this method of cultivation humus is formed and made available for plant food by the bacteria working on it during warm weather. To prevent the decomposed vegetable matter

from leaching away and evaporating during fall and winter, it is advisable to rib the land, using a double mold-board plow, about twenty-two inches wide. Before doing so, however, all barnyard manure on hand should be spread on the surface and ribbed in with the vegetable matter. This makes a superior quality of plant food for any kind of crop, more especially for corn and roots, as these crops are heavy feeders.

After the corn is harvested, cultivate and in the fall rib the land, which is preferable to plowing. The root land is ribbed across the drills without cultivating. The tops are thus mixed with the humus, making a large amount of superior plant food for the succeeding grain crop, viz., spring wheat, barley and oats.

Before sowing in spring, the drills are levelled by harrowing and cultivating with a spring-tooth cultivator. The grain is drilled in, sowing not more than one bushel and a half per acre. The grass seed is sown at the same time, in front of the spouts. The following mixture is used: Seven pounds Red clover, three pounds Alsike and four pounds timothy.

After seeding, the land is harrowed across with a horse weeder, somewhat resembling a horse rake with three rows of teeth. The land is not rolled until the grain is up and the surface of the land thoroughly dry, because a smooth and compact surface increases capillary attraction and in consequence the land is liable to dry out.

WM. RENNIE, Superintendent.  
Experimental Farm, Guelph, Ont.

#### OTHER PHASES DISCUSSED.

The following letters, besides dealing with crop rotations, varieties and quantities of seed sown and the preparation of the ground for same, deal fully and in a practical manner with the selection and preparation of seed, the mixing of grains for forage or for feed grain, and the sowing of flax and rape along with grain crops. Every letter is worthy of a careful perusal.

#### A Three-Crop Rotation.

BY W. G. BALDWIN, ESSEX CO., ONT.

I follow a three-crop rotation—clover, corn, and wheat (fall wheat). Spring wheat does not succeed with us. The varieties sown last fall were D. S. Golden Chaff (a trial one acre), Diamond Grit and Genesee Giant. Oats—Early White Egyptian, Barley—Mensury. No peas here, except with oats for feed. In preparing clover sod for corn, I plow about six inches deep, about two weeks before planting; harrow and cultivate with disk harrow again. Mark out the ground 34 feet each way, and plant four kernels of good bright seed in each hill, and cover about 34 inches deep, and as soon as it is one inch high cultivate with Diamond tooth cultivator, well let down so it does not throw the soil in a ridge, but loosens the soil beneath the seed, lets in the air which dries and warms the soil, as that portion of a corn row cannot be touched again during the growth of that crop. This crop of corn is followed with wheat in the fall (sometimes a small portion with oats the next spring). The portion sowed with wheat is plowed a little deeper than for corn, rolled, disked, and rolled again, then sown with two bushels of good, clean wheat per acre and left to the elements until the harvest. The same preparation is given in the spring to the land sown to oats, and good clean seed, sown three bushels to the acre, with all land sown to small grain again, sown with 10 to 15 pounds red clover (clean, bright seed) to the acre. For barley I would give the same cultivation, with two bushels seed per acre.

As to the preparation of seed, I have it run through a grading mill to get just the largest kernels to sow, and by a judicious change of seed—more particularly oats—I have no smut, and with the quantity of seed named to the acre, I have no weeds in small grain. I have had no experience in sowing mixed grain, except peas and oats for feed grain, but my soil is not adapted to peas, and, again, we are so troubled with the pea bug that it does not pay for the trouble. We find the use of crimson clover, for filling up space where red variety has not taken, to sow after harvest and harrow in, is a good practice to keep down weeds and also make good pasture, so much so that it seems an indispensable adjunct to our rotation.

#### Select Seed from Early Portions of Field.

BY CHARLES C. FORD, ELGIN CO., ONT.

*Rotation of Cropping.*—Clover sod (or clover forage) manured and late summer-fallow for wheat, rape sown on wheat stubble, sown again in spring with cereals, then seeded with grass seed with oats and barley—this is my general system of cropping, but if not practicable I deviate onto corn sown on clover or grass meadow and sown after with spring cereals. I usually seed down with grass seed every three years.

As this locality is not adapted for the growing of spring wheat, oats and barley are grown in larger quantities on this account, therefore probably more care is given to other spring cereals in the way of preparing the soil. I have found that fall wheat stubble makes an excellent piece of land to utilize after harvesting by gauging or shallow plowing and sowing rape at the rate of three to four pounds to the acre as soon as possible after the wheat has been harvested. It affords excellent pasture for lambs and young cattle till early winter, and is also splendid for cleaning land of noxious weeds and grasses. In the following spring manure heavily and plow to a fair depth, and you will have by cultivation a first-class plot for either oats or barley. I usually sow barley at the rate of two to two and one-half bushels per acre, and oats from two and one-half to three bushels per acre. I always sow with drill. Another system of preparation I have found to give good results is (providing your recent or last year's corn stubble is free of grass) to manure what you can thoroughly. Put under by gauging-plowing as early in the spring as possible. If you can succeed in having it well cultivated by seeding time you have an excellent piece of soil for oats or barley, and nine cases out of ten you will be rewarded with a heavy yield, provid-

ing the season is at all favorable. Peas are sown on clover or new land (if the former it must of course be manured), plowed fairly deep, and sown with from two to two and one-half bushels per acre, but as the pea weevil has been so destructive the majority of farmers in this locality, as well as myself, have been forced to stop sowing them. My land is sand, gravel and clay loam, on which I candidly believe fall plowing an injury rather than a benefit.

In preparing my seed grain I select the most vigorous and earliest-matured pieces of crop when we are harvesting, and aim to garner, thresh and store it separate from the rest, and when cleaning it in spring to sieve out all the small grain and noxious weed seeds, if any, and leave a uniform size, evenly and early matured grain for seed. It is really a great saving at all times to have a good mill.

In reference to sowing mixed grains for forage, I believe it to be a good idea. I have found rye sown in the fall (one and one-half bushels) and rape sown with it in spring (two to three pounds) splendid pasture for late summer. As for feed grain, I prefer to grow it separately. As I have had no experience with flax, I cannot therefore give you my views in reference to it; but for rape, I have grown it successfully for a number of years, and for it I am all praise. And it is indeed a good forage crop sown with oats or barley, providing you do not sow it too thickly—two to three pounds is sufficient to the acre. If a drill is used in sowing the grain it can be put on in as small quantities as needed, and very evenly as well.

#### Depend Mostly on Home-Grown Seed.

BY JAMES TOLTON, BRUCE CO., ONT.

My system is the eight-year rotation. I would not say it is the best, but it seems to be the best adapted to my soil and methods. My soil is a clay loam, not at all heavy, with a clay, gravel subsoil, and seems to be peculiarly adapted to the growth and propagation of the Canada thistle. Our rotation is as follows: 1. Peas on sod, plowed in the spring or fall (prefer plowing in the spring). 2. Fall wheat on pea stubble. 3. Oats. 4. Roots (mostly turnips). 5. Spring wheat and oats; the last two years mostly oats and seed to grass. 6. Grass cut for hay. 7 and 8. Pasture. The thistles are well checked in the cultivation of the roots, and being under grass three years seems to prevent them from propagating. We shall sow spring wheat mostly on our root ground, of the Colorado variety—an old sort, but did fairly well last year. We prefer to plow the root ground in the fall, making a seed-bed before sowing, with a disk or some other harrow or cultivator, and sow 14 bushels per acre.

On the fall wheat stubble we shall sow oats, sowing the same varieties that we have done the last two years, they having succeeded fairly well, viz., Siberian and American Banner. We go over the fall wheat stubble as soon as practicable after the wheat is off, with a twin plow about three inches deep, and harrow to start any weed seeds and out the thistles; after this, plow with a single plow either in the late fall or spring, sometimes both fall and spring. Sow, in an ordinary way, two bushels per acre. We always have a few acres of rape, and follow it with Mensury barley or oats. The last few years there has been but little profit in growing barley for sale. I grow some for feed and find I get more grain and straw from the Mensury than the ordinary six-rowed. Sow two bushels of barley to the acre. I shall sow peas on sod plowed in the spring, well harrowed and rolled, so that there shall be a level bottom for cutting the crop. Varieties—the old variety, Multiplier, or Golden Vine. I have tried Rennie's Silver King, Mummy, and some other kinds, but find the Golden Vine gives rather the best satisfaction. Of the small varieties, sow two bushels, and of the large about three bushels to the acre.

I change my seed grain occasionally and frequently try new kinds of merit, but depend mostly on seed of my own growth, and as I aim to keep the farm as free of weeds as possible (have not seen on the farm as yet many of the known weeds), when harvesting select some of the best for seed, and depend on a good fanning mill for the rest.

I have not yet sown any mixture of grain for feed purposes, but am of the opinion that peas and oats sown together in the proportion of two bushels oats and one of peas is a good mixture and profitable. Although I have not so far sown flax or rape with spring grains, I would not say but that in some cases it might answer, more particularly rape sown with barley, sowing two or three pounds of rape seed. The seed is not very expensive, and barley growing a small bulk of straw would not shade the ground very much nor choke the rape so much as some other grains.

#### Secure Seed from a Different Soil in the Neighborhood.

BY ALEX. HUME, NORTHUMBERLAND CO., ONT.

In breaking up sod our first crop is peas or sometimes oats, then one or two crops of ensilage corn, manuring previous to corn crops, then oats and seeding down, or if desirable a crop of barley to seed with. If no catch is secured and the ground is clean, a crop of peas, a coat of manure, well worked up by gang-plowing immediately after taking off peas, followed by a good plowing with single plow, and sowed to fall wheat, again seeding. We cut usually two crops of hay; sometimes one. Pasture one to three seasons, just as other land is working. If no corn, two crops of oats instead of corn, and so on. Since adopting silo eight years ago we do not summer-fallow as before, as we have larger quantities of a better quality of manures to return to the land. I do not know name of spring wheat, but intend to buy seed of a variety that has done well in the immediate neighborhood. American Banner oats, six-rowed Canadian barley, small and Prussian Blue peas will be grown this year. We usually gang plow as soon as possible after taking off the harvest, then with the single plow, beginning as late in the fall as we can get ground all plowed before freezing up. We haul our manure out to the field as made. Have our stable so that we can drive through behind the cows with them in and clean it out, with either sleigh or wagon, as is necessary. We put the manure from the horse stable in the gutter of cow stable to soak up liquid and all is taken out together. We use an up-to-date cultivator in spring to work up the soil, finishing with a fine

harrow, sow with harrow, then the one and one-half bushels barley two and one-quarter.

We secure our who has had a good properly cleaned

We sow a mixt per acre for soiling sow rape with oat

#### Allow No Fou

BY J. FREN

I have been c rotation of cropping to seed down as thereby get as m soil. The breaki regulated by the c generally plow la seed time the fo favorable to peas or barley are to on top, but never late summer and decomposition of do not ridge up would be better. without bringing as the pea straw r wheat. Roots an manure is applied small heaps, or and calf pens is r from either horse five or six loads commences. Thi wheat and seede aim to have grou before it is prop In sowing grain the loose soil and below, and the lo if the grain is sc some is near the s loose, dry soil, an

The varieties I Harrison's Bearded land, and Joane varieties are liab Canadian Beauty rison's Bearded, Duckbill barley, and 14 bushels of from best parts foul seeds to rip summer, removing to cleaning grain

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#### Underdr

BY ROE

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#### Rich and S

BY J. D

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