

should go to work as soon as possible between the drills, and this proceeding will be made much more easy of execution by the row being made sooner visible by the more rapid germination of the rape or turnip-seed.

Sowing.—By far the most regular depositor of carrot seed mixed with mould or charcoal, as above, I ever saw is the Plant-jr. drill. Of course it only sows one row at a time, but we do not need a machine that will go over a great number of acres in a day here. After sowing, the roller should be used, as the tiny one attached to the drill is not heavy enough to do much good; indeed, we generally roll both before and after the drill, and try to keep the coulters of that implement exactly in the middle of the space rolled, so that the horse-hoe may work as close up to the row of plants as possible.

If you have no sower, you may, after rolling, draw a shallow drill along the center of the space with the angle of a hoe or a pointed stick; a inch will be deep enough; then sow by hand and cover with a garden-rake, rolling afterwards.

In this way, the rape coming up, at latest, 6 days after sowing, the horse-hoe can go to work at once, to the destruction of the weeds, and the quickening of the young plant in its struggles to emerge from its cradle. The early use of the hoe—hand and horse—will save dollars an acre, for the only expensive part of carrot growing is the singling, and if the weeds are kept down and the proper system pursued, even the singling need not cost very much.

Now, the proper system is this: As soon as the horse-hoe can be safely worked, let it go between the rows made visible by the rape; not too widely set this first time. Seven or eight days afterward, pass it through again, but set it wider this time, as the carrots will be—or ought to be—well up, let the curved side-hoes (see p.—vol. 2) cut the sides of the drills well down till not more than 1½ inches be left on each side of the row of carrots. If you will do this job well, you will see that the costly process of hand-hoeing is reduced to a minimum, all that this implement having to attend to being the 3 inches on which the carrots stand. Of course if your horse-hoe has no curved side-hoes, the sooner you get your blacksmith to make two the better; the Scotch drill-grubber, and other implements of the kind, do well for the subsequent operations of stirring the land, but nothing but the curved side-hoes can cut down the sides of the drills.

Edge-hoeing.—A capital thing is edge hoeing, but you will generally find it badly done here, as thus: the workman will fancy he has to hoe all over the piece, whereas he should only strike his hoe alongside of the row of plants; on each side of course—; therefore, he should take the row between his feet, and, with a *four inch* hoe, go up each drill, with a *chopping* stroke. A *chop* and not a *draw*, because the latter covers up the weeds and the former leaves them bare. Again, the *chop* cuts deeper than the draw, and thus secures the object in view, which is to make the earth all round the infant plant as loose and free as possible. In edge-hoeing potatoes, there will of course be a third stroke, i. e., between the plants.

If you think you can afford it, edge-hoeing carrots materially lightens the work of the singlers, a. i., after all, as

a lad of eighteen, properly instructed, can edge-hoe an acre a day easily, it can cannot be an expensive job.

Singling-carrots.—This may be done cheaply enough, if done wisely. We saw, when we first went to Sorol, Senator Guévrin's people singling carrots with their fingers alone, and were not surprised when M. Pierre, the Senator's son, told us that he did not think it paid to grow them, as the singling alone cost fourteen dollars an acre. How he changed his mind may be seen by the letter on p. 66 of this volume.

What distance shall we allow between the carrots? We must not compare widths with that allowed for swedes and mangolds, for those plants do not dive down so deeply as carrots, and their tops spread out a good deal more. Let us say three plants to fifteen inches.

To single carrots five inches apart, a special tool will be required, and one made of an old scythe-blade answers well. This hoe should be 2½ inches wide at the cutting part, and being very sharp, a woman chops out the gaps with the greatest ease, using a *pushing* and a *drawing* stroke, alternately. Observe: in using the hoe for this purpose, the woman must stand squarely at right angles to the row; we had great difficulty in impressing this on the minds of the *Soreloises*.

The hoe is followed by a boy or girl, who pulls out all the plants but the strongest one from the bunch left, and thus the job is completed. It may possibly cost one dollar an acre more to single carrots in this way than to single swedes, but certainly not more, and the crop is certainly worth it. The horse-hoe will of course be kept going as often as the master can find an opportunity, and the subsequent crops of grain and grass will testify to the good effects of thorough cultivation. Clearing the land of weeds is a very small part of the benefits derived, from frequent judicious horse-hoeing.

Harvesting-carrots.—Cultivated as we have advised, Belgian carrots are easily pulled up when the time of harvesting arrives: a boy of twelve can draw them. Care should be taken to pull them up straight, as the lower part of the root is easily broken. An active man walking up between two rows can draw the carrots out with both hands and put them together in the centre. Then, the *toppers*, with sharp knives, or part of an old scythe set in a handle, follow; the tops should be cut off without cutting the carrot itself, and either carted off for the cows, fed off where they grew by sheep, or carefully spread and ploughed in.

After exposure to the air for three or four days the carrots may be put into the root-house or cellar. As long as they are in the field after being pulled, the heaps should be covered at night with the tops, which should be removed as soon as the danger of morning frost is over.

Are the tops of carrots, &c., worth much? They must accumulate, as the root harvest begins with mangels and carrots, about October 15th, and ends with swedes about the 25th. They might be ensiled with a mixture of straw—pease straw for choice—; they certainly increase the flow of milk, but an extra allowance of them causes looseness of the bowels, and young stock lose condition in them if they get as much as they like to eat.

As to the use of carrots when grown, you cannot do wrong in giving them to all your stock. They are the best roots for milch-cows; growing

pigs do well on them; ewes, after lambing, nurse their offspring all the better for a liberal allowance of them, and horses in full *slow* work do as well on carrots, straw, and oats, as on hay and oats. In fact, on light soils, the Belgian carrot should be the main root-crop of the farmer. We like swedes and mangels: we love Belgian carrots.

PARSNIPS.

We observed, just now, that the carrot is the best root for milch-cows, because we do not suppose that any farmer is likely to grow more parsnips than he requires for his table. The parsnip—*pastinaca sativa*—is, doubtless, a very valuable root for all kinds of stock, in fact, rather more valuable than the carrot, but the seed is so costly, it takes so long to come up and the dipping is so troublesome and expensive, that we cannot recommend its cultivation.

The seed of the parsnip is very light; in England we used to sow ten pounds to the acre, and the seed here cost sixty cents a pound, or six dollars an acre!

If you try it, steep the seed and treat it in every way as recommended for carrots. A good strong loam is the best soil for parsnips; we never did much with them on light land. The finest crop of them we ever saw was one grown near Brighton, England, at the foot of the Southdowns; there were fourteen acres of old grass-land in the piece, of first rate quality. It was trenched two feet deep, the turf thrown to the bottom of the trench, and the crop, which was sold in Brighton of fifteen dollars a ton, was thirty-five tons to the acre! The trenching cost thirty dollars an acre, so the crop paid well, but the land was very good and the market handy.

Parsnip-seed sown in May, 1884 lay six weeks in the ground before it came up! It may be doubted whether the frost resisting power of this roots is of much advantage to the Canadian farmer. It is true parsnips can stand the winter in the ground, but we want them for use in winter, and though we can get them up in April, the land is so wet at that season that it does more harm than good to go poking about after them. No, we had better store parsnips, if we grow them at all.

Gypsum.—It seems that, in many parts of the State of Michigan, the use of plaster—sulphate of lime—has been given up, as it is no longer effective. That it was once upon a time of very great service in producing large crops of clover and pease, there is no doubt, and it must have been a very profitable application, as the cost was only \$4.50 a ton, and from 50 lbs. to 100 lbs. an acre was the usual dose.

In England, many farmers, hearing of the almost miraculous effects of gypsum on leguminous plants on this continent, tried it on their land, and found it absolutely useless.

In many parts of the Province of Quebec, farmers have told me that on heavy clay soils, where hardly anything will grow, pease dampened and rolled in plaster before sowing, produce a good crop!

The question seems to be this: does plaster become ineffective when, owing to improved farming, land, previously run out, is sufficiently provided with sulphuric acid and lime, in which elements it was previously deficient, by the dressings of manure applied to it?

However, we learn from a correspondent of the *R. N.-Yorker*, that Prof. Kedzie, of the Michigan Experi-

ment-farm, has been enquiring into this subject, and finds, as we should expect he would find, that "the analyses of the soil were unsatisfactory." The samples analysed were taken from fields "that had had annual applications, and from fields that had received no plaster recently, but the percentage of sulphate of lime was in both samples about equal."

Erratum.—Looking over some of the earlier numbers of this year's Journal, we find that, in a note, the printers have had the goodness to make the addition of an *h* to the name of England's greatest dramatist, after Shakespear of course, Ben Jonson.

Clover coming into blossom to-day, June 7th, on the Prie's farm, Sherbrooke St., Montreal. Quite fit to mow for green-meal, "without impeachment of waste."

Rape.—At the Ontario Agricultural College, the result of feeding lambs on rape was, that 1 acre of rape would pasture 36.8 lambs for 8 weeks, making in that time 762 lbs. of mutton! Now, allowing the crop to have weighed, say, 15 tons, a decidedly heavy produce, it would only have taken 40 lbs. of that plant to make a pound of mutton, a decidedly cheap way of growing meat. A well grown lamb would certainly eat and tread down 20 lbs. of rape a day, and yet "sixty lambs placed in a field of 2.18 acres of rape for 25 days, made an average daily gain of 0.26 pound:" there must be an error somewhere; rape is good, oh! very good, but it cannot work miracles.

Experiments.—"One of the hardest things to do is to make a trustworthy experiment in the field of agriculture," says an exchange. We should say: making a trustworthy experiment in agriculture is by no means difficult; to draw correct conclusions from the experiment when made: that is where the difficulty lies, and the well educated, practical farmer is the man who is most likely to solve the problem.

Mr. Shepard's letter, which will be found at p. 009 of this No., advocates cold water and out-door exercise on every winter-day for milch-cows. Mr. Hoard, who knows what he is talking about, does not agree with him; *v. infra*.

"In the matter of hitching devices, Mr. Hoard recommended anything but the rigid stanchion, which he called barbarous and advocated plenty of space, always. He said that all drink for cows in winter should be warm, as warm water increases the flow of milk, and a cow weighing 1000 lbs. will drink, on an average, 80 to 150 pounds per day. As little exercise as possible, consistent with health and vigor, is all that should be allowed. The more perfect the environment the less need of exercise.

To feed for butter alone is impossible, as a certain amount of food must go to build up the organization of the animal, but in feeding, give such foods as will best promote the flow of milk rich in butter fats—cottonseed meal, oil meal, pea meal, bran, and gluten meal."

Mangels.—At one of the States' Experiment-farms, it was found that, in feeding hogs, 8 lbs. of mangels possessed a feeding value equal to 1 lb. of grain. This would make mangels