

among the lighter coloured parts: the plants want vigour when they start, their green is pale, the herbage coarse, hard uninviting. The tread is unequal, one part of the foot sinking deeper than the other: the stock never seem satisfied: the trees have hard bark, and are covered with parasitic plants: the roads are soft, and full of ruts: the ditches plashy, and always falling in: mosquitoes, midges, all sorts of horrible insects fill the air: the plough, scuffler, and harrow have double work to do, and, even with double work, never succeed in pulverising the soil into a fine mould.

In the climate of our Province, it is something to add ten days to each end of the season. Draining will effect this, at least, and will help in enabling us to sow autumn wheat, if we



Fig. 5.



Fig. 6.

wish it. Why we don't wish it, I cannot conceive; for every show at Montreal proves that it can be grown to advantage, and Cap. Campbell's farm at St. Hilaire, described in the September number, would convince an infidel. Of course, autumn wheat won't grow in a swamp; but drain the swamp, and then try!

I do not think our draining here will ever be systematic work; that is to say, that whole farms, or even whole fields, will be drained on a regular plan at 25 to 33 feet apart. In the first place we can't afford it, and, again, the summer's heat acts too rapidly to make such intensive work absolutely necessary. It would pay, I doubt not, in the long run, but I look upon it as hopeless, and therefore pass it by.

No, what we must look for is local drainage, wet spots, here and there, in corners, under the line of a wood, in sheltered places where the wind cannot reach: this is about all we can, at present, manage. And it must not be supposed that I by any means underrate the value of even this slight improvement. The effects of this practical work will, when its benefits are seen, give each one who tries it an appetite for the task. It is so interesting in itself, to say nothing of its profits, that when once a man begins draining I have no fear of his halting on the road: if he begins with bushes, he will end with pipes.

Whatever material we may use for our conduit, we should form, first of all, a clear idea of the way in which the water is to get into it. Many people have a notion, that each drop of water that falls from the clouds, when it reaches the ground, has to hunt its way through cracks and crevices, following the easiest route, in fact, until it falls into the drain at the top. Nothing can be farther from the truth. *Percolation* is not the way. It is all done by the force of *gravity*. My readers all know that a sponge will hold a certain quantity of water, and no more. Let us conceive for a moment a sponge fully saturated: an additional drop is added from above: what happens? A drop oozes out from the bottom. So it is with drained land; but with this difference: the lowest drop, not being able to escape in any other way, is pressed upon by its superincumbent neighbours, and finds the easiest mode of disembarassing itself from the annoyance is to divide itself in two, and go, one half into the drain on the right hand, and the other into the drain on the left. We know very well that, after a dry time, drains do not run until the body of earth between them is fully charged with water, and we now see the reason why they do not: gravity acts

more easily in proportion to the depth it has to work upon; and this consideration alone should put an end to all idea of shallow draining; it having been satisfactorily proved by experiment, that, in a heavy clay soil with alternate drains of 30 inches and 48 inches deep, respectively, the 48 inches drains always begin to run, after rain, at least 24 hours before the others.

This, incredible as it may seem to some, I know to be a fact; and it can only be accounted for on the principle we have just enunciated. In Essex, Eng., again, where very shallow draining, at frequent intervals, had long been practised, upon the introduction of deep drains (in the same fields) the shallow drains ceased to run at all, not even acting as subsidiary feeders to the deep ones, when the latter crossed them at a lower level: gravity acted on a column of water 48 inches high, more easily than on one of 18 inches.

It has often been wondered at by non-critical observers, that an *open ditch* will allow a pool of water to stand within a foot or two of its *lip*; and that no deepening of the ditch seems to have any effect on the retentive spots.

The solution of the question is, that, in retentive soils, all currents of water *puddle* their bed, and prevent the water rising up through it: this by the way.

So much for the theory of drainage. Next month we will attack the practice.

ARTHUR R. JENNER FUST.

On Saturday, Oct. 23rd, I went to Outremont to see the root-crops of the Hon. Louis Beaubien. I was, I confess, completely taken by surprise; not so much by the mangolds, as by the carrots. The former were a good crop, though they had missed plant, here and there; but the White Belgian carrots were really superb. They stood as thickly as possible in the rows, and in size were equal to an ordinary quart bottle, or nearly so. There must have been, at the least, 25 tons per acre.

The land on which these roots were grown had evidently been a black sandy swamp; but drainage and cultivation have rendered it firm and homogeneous, and I shall be curious to see the crop of oats next season: I do not fancy it will grow wheat or barley to advantage. A good dressing of lime would do wonders for it, when it comes in turn for grass.

A. R. J. F.

Dominion Exhibition.—Official Prize list.

1st CLASS HORSES.

- Thoroughbred Stallion 4 years old and upwards:
Sect. 1st. Prize 1st. John Clark, Nepean 2nd prize Dawes & Co., Lachine. 3rd prize, Osborne Morton, Blue Bonnets.
Sect. 2nd. No Competition.
Sect. 3rd. Stallion 2 years old. 1st prize, Dawes & Co., Lachine.
Sect. 4th. No competition.
Sect. 5th. Filly 3 years old: 1st prize, Hugh Paton, Montreal.
Sect. 6th. Filly 2 years old: 1st prize, Dawes & Co., Lachine.
Sect. 7th. Yearling Filly. 1st prize, Jos. Hickson, Montreal. 2nd prize, Dawes & Co., Lachine.
- ROADSTER HORSES FOR DRIVING 15½ HANDS AND UNDER.
Sect. 1st. Stallion 4 years old and upwards. 1st prize, Norman McLeod, Eldon 2nd prize, William Lagan, Allan's Corner. 3rd prize, Isidore Charlebois, Pointe Claire.
Sect. 2nd. No Competition.
Sect. 3rd. Stallion 2 years old: 1st prize, Dr. Bergin, Cornwall 2nd prize, Nap. Lachapelle, St. Paul Hermite. 3rd prize, Andrew Scott, St. Laurent.
Sect. 4th. Filly 3 years old: 1st prize, Andrew Scott, St. Laurent. 2nd prize, Dawes & Co., Lachine. 3rd prize Dr. Bergin, Cornwall.
Sect. 5th. Filly 2 years old. 1st prize, Dr. Bergin, Cornwall 2nd prize, Dawes & Co., Lachine. 3rd prize, G. O. Rainboth, Aylmer.
Sect. 6th. Brood mare with foal by her side: 1st prize, Nap. Lachapelle, St. Paul Hermite 2nd prize, L. Brasseau, Laprairie. 3rd prize, James Curry, Curry Hill.
Sect. 7th. Pair matched horses in harness: 1st prize, Victor Beaudry, Montreal. 2nd prize, R. Elliot, Village St. Jean-Bte. 3rd prize, John Davis, New Glasgow.