

garden was as clean at picking time as could be, but I should like to see the ground a little finer. There might have been 6 cwt. to the acre, a fair crop enough for the country.

Water is furnished to the buildings by windmills pumping from wells. This summer and autumn, here as elsewhere, the wells have been dry, and many a thousand puncheons have been filled at the river. They talk about water-works being established by the corporation; but the rock is so very near the surface that it would be, I fear, too expensive a job for a place of no commercial importance, like this.

A field of a dozen acres or so was devoted to the root-crop this year: an utter failure all over, I regret to say. The mangels were destroyed by the outworm, the swedes by the turnip-beetle, and the Belgian carrots were checked in their growth by the drought. The preparation of the land for these crops was not quite what it ought to have been. The manure applied was rich and abundant, but the pulverisation of the soil by no means complete. As the first sowing of the greater part of the swede division was entirely destroyed by the *haltica*, a second sowing was made, unfortunately on the same surface as the former. Now I never saw this mode of procedure answer. The first sowing of any root-crop failing, the only chance of a successful second sowing is to pull the drills completely down to the manure, and re-shape them with the double mouldboard plough. Again, when the first sowing of mangels fails, there is no use in re-sowing with the seed of that plant, as it takes a long time to come up, and the crop, even if full of plant, can never be worth growing. Mangels failing, swedes should take their place; just as, if swedes, unless sown very early, fail, white turnips should take their place.

Mangels ought to do well on these farms, as the Messrs. D. w. have in their farms a most valuable manure for that crop: the rootlets of the malt, commonly called *cummins*. The sweepings of the malt kiln *under* the wire will be found full of half-burned rootlets and ash, which on land in good heart, applied at the rate of 25 bushels an acre, would alone produce a fair crop of white turnips. Had I these valuable matters in hand, I should use, for mangels, the following dressing:

Dung.....	20 Scotch-cart loads
Sulphate of ammonia....	1 cwt.
Kiln sweepings.....	10 bushels
Cummins .....	10 do.

As it is clear that the mangel plant requires something to push it quickly out of the way of the enemies that attack it in its youthful stage of growth, I venture to propound the addition of the above dose of forcing manure. The cummins are very rich in nitrogen, and we have every certainty that the mangel is chiefly dependent upon that constituent for its yield.

The whole of the land devoted to root-crops was kept perfectly clean throughout the summer, but the horse-hoeing might have been deeper with advantage, and the drills were not pulled down enough.

The cultivation of the potato-crop Mr. Tuck evidently understands thoroughly. The plant was perfect, the land well stirred, not a weed to be seen, and, with every disposition to find fault, I can only say that I should not have earthed up quite so high. The general crops on the farms were very good, particularly a piece of barley on the Cross farm, though the seed was mixed 6-rowed and 2-rowed, which will tell a tale on the malt-floors. Some *White Tartar* oats promised to yield well, but in this country I prefer the *Black Tartars*.

As for the grass-land, no special remarks are called for, except that the pastures are rather vaguely treated, that is, they are not regularly fed down. This is probably owing to

the scarcity of water, the gates being left open to allow the cattle to find their way to the pond when they wish to drink. In such a dry summer as the past, one cannot be extreme to mark little defects of this sort. One piece of permanent-pasture near the farm-buildings kept a surprising lot of mouths going in the driest part of the year, to the great astonishment of Mr. Tuck, the foreman, who is an Englishman, from the county of Hertford, and must know from experience what permanent pasture means.

There is no silo. Fodder-corn, on the Cross farm, was an abundant crop, partly cut for green-meat, partly dried for after consumption. Sown in drills 16 inches apart, with no after cultivation. A large piece of tares and oats sown in succession; a second crop, of white turnips, might have been had after the greater part of this was out.

Hay allowed to stand too long before cutting. On such a large occupation as this, if the hay-season is not begun extra early, the latter mown portion is sure to be too ripe.

A little more harrowing and rolling after the sowing of the grain-crop would do no harm: the land does not tread kindly, in which case the grass-seed does not take kindly, and this may account for the frequent failure of the clover plant here in places where the timothy is abundant.

The implements are all of the best description; good roomy Scotch-carts equal to 15 cwt. of dung per load; iron swing ploughs, and iron harrows, &c. One thing I was surprised to see: a Norwegian harrow, a rare tool anywhere, and one which in a stony soil like this cannot be of much use. I remember well its being first exhibited at the Royal Agricultural Society's exhibition at Shrewsbury, in 1845, Mr. Frere, the exhibitor, having just imported a specimen from Norway. The acting part of this implement consists of a frame containing four horizontal spindles, on each of which is fixed a set of teeth projecting from them like the rowels of a spur. These teeth revolve with the spindles, those on one spindle interworking with the others, so that they severally clear and clean each other. Upon inquiry, I found that, owing to the accidental breaking of one of the parts, this tool, which was bought at Mr. Andrew Allan's sale at Ardgowan, had never been used on Messrs. Dawes' farm. The only specimen I ever saw at work was one belonging to Archdeacon Phillpotts, in Cornwall. He spoke very highly of it, and used it constantly in the preparation of land for roots. It would be no good to try this harrow without a powerful team of at least three horses yoked abreast. I was very glad to see the teams at work on the stubbles immediately after harvest, though I utterly disagree with Mr. Tuck's system of autumn-cleaning. He begins with the plough, inters the couch and other root-weeds, then uses the grubber, and then gives another and a deeper furrow, laying up the land for the winter. Now, this I hold to be a great mistake. Why cut the roots of the couch in pieces, to begin with, and why bury them afterwards? With such heavy horses as are employed on these farms, no grubber or scarifier can be too powerful, not even that cumbersome, though most effective tool, the Ducie Drag. The plough, again, is much too slow in its work. A good scarifier that will skim off the upper inch or two, like Bentall's broadshare, or Coleman's drag-harrow, followed by a duck-foot harrow, would do the job in one-fourth of the time, and much more effectually. My own plan used to be to use Coleman's implement, with the broadshare tines on, first, and then, substituting the points, to cross the former work. To make a finish to the work, pass the common harrows and the roller over the piece—roller first of course—gather the root-weeds with the horse-rake, and burn them, or make bottoms of dung heaps with them—with our scorching sun there will not be much danger of the couch coming to life again if the operations are begun immediately after