

variety yet produced; but with less than this difference, it offers apparently no special advantage.

"In comparing the analysis of the turnips grown in clay and sandy soil, it is interesting to notice that those grown in the latter, though containing a somewhat larger percentage of water, are slightly superior to the others, as they contain a larger quantity of oil and soluble albuminous compounds. The difference becomes more conspicuous, when the composition of the dry matter of each is calculated at 100 parts, as done below:—

	Clay.	Sand.
Oil.....	4.02	6.78
Soluble albuminous compounds.....	5.84	9.52
Insoluble d.....	3.24	3.04
Soluble respiratory matters.....	43.53	39.45
Insoluble matters, chiefly woody fibre.....	24.15	33.15
Ash.....	10.22	9.01
	100.00	100.00

"It then appears that the total albuminous matters in the turnips grown in sand is greatly in excess of those in the sample from clay. Looking at the matter in this point of view, we have also an interesting comparison between the dry matter of the turnip and that of oil-cake, from which it appears that the former has nearly half the nutritive value of the latter; and hence 100 lbs. of the Greystone turnip should be equal in value to about 3 lbs. of good oil-cake."

We are not aware whether the Greystone turnip has yet been introduced into Canada; if it has, we should be happy to hear from those who have tried it. From all we can hear of its claims, it should certainly be fully tested in this part of the world. Fleming & Co., seedsmen to our Board of Agriculture, will be supplied with seed against another season. In the old country, we are told, that it requires to be sown early, and comes to maturity in time to be supplemented by wheat, or any other autumn crop.

Description of the "Forest Cultivator."

SINCE the notice of this excellent implement appeared, in No. 8, of the present volume, we have received numerous enquiries from our subscribers respecting it. We have, therefore, obtained the following full particulars of its construction, mode of working, price, &c., from the patentee, Mr. J. A. Cull, of this city; and trust the information will be satisfactory to our correspondents who have sought it.

Until this implement was brought out, the clearer of new land had to depend on the A drag for scratching over the surface of the newly cleared forest, and burying the seed. Every root formed an obstruction,—the work was very hard on the horses and cattle, the surface of the soil was very imperfectly moved, and the grain was most inadequately covered. The consequence was (and is where drags are still used), that the grain came up very imperfectly and unevenly. In wet spots it vegetated at once; but in dry ones, it did not grow until after the first rain. The results at harvest, were an unequally ripened crop, and a sample, some of which was over ripe, and some shrunk from being cut too green. These evils were not so much felt while none but the best land was cleared, but now we are clearing that of an inferior quality, and such as in the first settlements was passed over. It was to meet these difficulties that the "Forest Cultivator" was devised. It consists, as will be seen in the cut on page No. 113 of vol. II, of a triangular frame, with three tines or shares, something like double-breasted ploughs, but the front shares made in the form of a sleigh runner. These are sharpened in front, and the weight of the frame, and the formation of the shares or tines, makes them penetrate the soil to as great a depth as the roots will allow. It thus raises all the soil that can be lifted, and throws it up in a very roughened and uneven state, full of holes and cavities, of sufficient depth to ensure the burying of the seed. On striking the roots, it glides over them without any serious shock, and re-enters again on the other side. As the three shares or tines are placed in a triangle, it (like

a three legged stool) adapts itself to any surface however uneven, and although one of the shares may be thrown out by a root, the other two are still at their work. The triangular frame enables the team to drag it close to the stumps, and the shares on leaving the ground, always carry soil close up to the stump, thus leaving a place for the growing of the seed, which is entirely missed where the drag is used. It is used first one way and then across, and leaves the surface of the ground covered with a loose tilth, of from 4 to 6 inches in depth. By a peculiar adaptation of the shares, they can be set as deep into the ground, or as shallow as is thought advisable, and the handles being long and powerful, enable the operator to guide it as he may wish. Although heavy to look at, a team of 2 horses, or a yoke of oxen drag it easily; and horses will go over 3 acres, per day, twice in a place, once and across. The grain is then sown, and a light harrowing buries it completely, leaving the surface of the land in far better condition than was heretofore attained by ordinary means.

The implement is equally useful in the cultivation of fallows, and of land which has been once or more times ploughed in new clearings: so that new land, after the first crop, instead of being laid down to grass, can be used for other crops, and thus a great waste of time and land avoided. It will not work on old sod, or thick stubble, where the soil or stubble forms a sufficient obstruction for the sleigh-shaped tines to ride over; but where the surface is at all broken by the plough, it works well, and completes that which the plough will only partially do. It is equally useful to work old fallows, the moveable tines enabling the operator to go deep or shallow, as he may desire. It covers three feet wide each time it goes over the land. This implement is now in pretty general use (or at all events it is well known), in Perth, Huron, and Bruce, and is gradually working its way in other parts of the Province. The price at which it is sold, is \$16. It is strong and heavily ironed, and seems likely to wear a length of time notwithstanding the rough usage it meets with amongst the stumps. It is not one-half as hard on the horses as the old drag.

London Sewage.

The Metropolitan Board of Works, and a committee of the House of Commons, have approved and recommended a scheme, devised by Messrs. Napier and Hope, for the utilization of the sewage of the City of London. The leading features of this scheme are delineated by the *Fidd* as follows:—

"A culvert will be constructed ten feet in diameter, which will tap the northern main outfall sewer of the Metropolitan Board at Abbey Mills, three miles from London. This culvert will run for a distance of three and a half miles, with a fall of two feet per mile, to a point where the levels of the ground will require it to be lifted twenty feet. The discharge will then continue in a culvert of the same dimensions, sometimes in cutting, sometimes on embankment, until it reaches the head of the navigation of the river Crouch, at Battle-bridge, in Essex, twenty-eight miles from the commencing point at Abbey Mills. The sewage will be again lifted twelve feet by pumping at nine and a half miles. The object of these lifts is, besides increasing the velocity of the current, to cause the culvert to command as much as possible of the surrounding country by gravitation. At Battle-bridge the main culvert will divide into two smaller ones, running on the north and south sides of the river Crouch. That on the north will be eighteen miles long, terminating on the Dengie Flats; that on the south will be sixteen and a quarter miles long, terminating on the Maplin Sands. Both these places are extensive foreshores on the east coast of Essex, dry at low-water, and several miles in width, by about twenty miles of aggregate length. These vast plains are to be reclaimed from the sea by embankments (similar to those which are common in Lincolnshire, Holland, and other countries) to the extent of some eight thousand acres in the first instance; ultimately, probably twenty thousand acres will be included. There is scarcely any population at present along these dreary shores, which, however, will become, if the project is carried out, the most highly fertilized lands in Great Britain. The sewage will be dischar-

ged upon these flats, and made to cover the whole of them by gravitation. The effect of this discharge when these sands are shut off from the sea by the banks, and other arrangements which will presently be described, will be to convert the barren surface into a tract on which crops of grass as rich as those on Craightonny meadows may be grown. In the course of time, the gradual deposit of the particles held in suspension by the sewage will permanently increase the value of the sands.

This scheme is, in effect, an enlargement of the operation which has been so successfully carried out in the face of the whole public on the Craightonny meadows, near Edinburgh—the tangible result of which has been to convert land previously of little value into some of the richest soil in the country. It is a positive fact that, whereas part of the Craightonny meadows were once not worth 5s. an acre, they now bring in a rental of from 22l. to 40l. per acre; and though it is stated that these sands are of a different nature to those at Maplin, and it is pronounced by Baron Liebig that the latter are not calculated to absorb the sewage with advantage, yet the balance of evidence is in favour of the scheme. It is calculated that the cost of the works necessary to effect a similar transformation on the Maplin Sands and Dengie Flats will be 2,100,000l., and that the result will be to convert barren sands into 8000 acres of land, eventually worth 30l. per acre rent; or, in other words, a capital value of from 4,000,000l. to 5,000,000l. sterling. Nor is this all. Profit may be reaped and advantage gained to the land all along the course of the proposed culverts, by allowing the farmers to have the liquid sewage turned upon their fields at a price, and the area of cultivated land which such operations may be made to influence, is calculated at 80,000 acres. In addition to this, it is expected that, by the natural action of the tidal currents, the foreshore of the 8000 acres, so to be reclaimed, will shallow up gradually, and so, after a short period, it will be possible to reclaim at moderate cost another belt of sand of equal extent; and should the Government in time cease to require a tract of land at Shoeburyness for artillery practice, a further considerable area would be available for the reception of the London sewage on the north side of the Thames, and would be equally convertible into freehold land worth 400l. to 600l. per acre."

Flax.

THE flax crop has taken such hold of the public mind that we find it necessary to revert to its cultivation now, approaching the eve of the proper time for sowing it. That it is a fully remunerative crop when properly managed, and markets for it available at a moderate distance, there can be no doubt, if cultivated in due proportion to the size of the tillage farm; but we by no means recommend its extension beyond that proportion, which cannot be, with safety, estimated at more than one-eighth or one-tenth of the area under cultivation. Some mistakes were made last year in sowing too great a breadth by many farmers, without due consideration, so that we are obliged again to recommend caution, both on the part of the tenant, the landlord, and the agent. It is better to be under the mark than over it, till, by practical experience, each cultivator becomes acquainted with its after management and manipulation; some samples of last year's production, though of first-rate quality up to the period of steeping, having been so spoiled in that delicate process as to be wholly worthless.

Such results as this take the "courage" out of a farmer, and give him such an indolent opinion of the flax crop as to make him resolve never to attempt it again. In other instances, though everything went on well, the want of a market has acted as a damper on future flax operations, and it was only this week that a gentleman produced a most excellent sample of scutched flax in this office, when making enquiry as to where he could get a market for it. We have only further on this head to recommend caution. Let each sow more or less according to the area under tillage; but avoid going too deeply into its cultivation till better acquainted with its management after pulling, and a market for it.

We have so repeatedly inculcated the necessity of deep autumnal cultivation of the land intended for flax that we must presume it has been attended to. If so, the spring tillage should be of a shallow but thoroughly pulverized description, and best performed by the grubber, harrow, and roller, so as to produce a perfectly fine tilth of 2½ to 3 inches in depth, to ensure the perfect and even braiding of the seed. Below that depth the soil should be of a close, homogeneous, compact texture; for, though the flax roots descend to a great depth in search of food, a loose, deep, friable soil is as inimical to the flax as it is to the wheat plant, causing both to fall at the root or "lodge." If deep autumn cultivation has not been attended to, it must, of necessity, be performed in the