## Cost and Profit of a Root Crop.

*To the Editor of* THE CANADA FARMER:

SIR,—In the 6th No. of the present volume of the CANADA FARMER an able article appeared on the "turnip and other root crops," calling the attention of farmers to the cultivation of roots. One reason mentioned why farmers did not raise more roots was the "enormous amount of labour which, they supposed, had to be expended on them." No doubt this is one of the chief reasons why roots are not more cultivated, and is especially a great "bugbear" with the numerous class who do not keep an account of the labour expended on the farm.

Below you will find my account of my root crop last year, and the cost per bushel.

| | On 1 5 6 acre. | | | Dr. |
|---|---|---|---|---|
| To ploughing (Fall & Spring) & harrowing | @ $2 50 | per diem | | $ 7 75 |
| " Rowing | " | " | " | 2 00 |
| " Drilling seed | 2½ days | " 0 75 | " | 1 62½ |
| " Seed | | | | 1 75 |
| " Scuffling (twice) | 1 day. | " 2 00 | " | 2 00 |
| " Hoeing | 19 days | " 0 75 | " | 14 25 |
| " Transplanting | 3 days. | " 0 75 | " | 2 25 |
| " Digging and topping | 22½ days. | " 0 75 | " | 16 75 |
| " Storing and hauling | | | | 9 50 |
| " Rent and taxes | | | | 8 12½ |
| Total, | | | | $60 00 |
| | 1 5 6 acre | | | Cr. |

By 300 bushels mangold wurzel & 750 bushels carrots, 1050 bush.

Although this is not a very large yield, it will be seen that it cost only six and two-sevenths cents per bushel, while the price in Toronto is about twenty cents I consider that it paid me better than any crop which I raised last year; and if farmers would once commence raising roots they would find it not only profitable in the crop of roots, but also in its effects on succeeding crops. Farmers, keep an account of your crops, and you will discover that it will pay *directly* as well as *indirectly* to raise roots.

JULIUS.

York Township.

## Extraordinary Root Crop.

THE farm connected with the Deer Island House of Industry, Massachusetts, under the superintendence of Thomas E. Payson, formerly of Rowley, produced a result in connection with root husbandry that is deemed note-worthy, and one that cannot fail to interest and instruct many of our readers.

The past year 4½ acres were used for growing mangel wurzels, and produced a gross weight of 294 tons. One measured acre of these mangels yielded 73 tons, by the scales; the tops, as estimated, would have yielded 5 tons more, making an aggregate of 78 tons, the largest produce per acre it is claimed, on record in this country.

Mr. P. states that this acre was planted to potatoes in 1863, to carrots in 1864, onions in 1865, and to mangels in 1866, in drills, 2½ feet apart. In the years previous to 1866, the ground was manured with kelp and stable manure, at the rate of twenty cords annually In the autumn of 1865 as much kelp was used as could be ploughed in, and no manure in the spring of 1866; it being differently treated in this respect from the rest of the 4-acre plot. It was ploughed again in the spring, and sowed the last of April, with four pounds of seed per acre, and the quantity of young plants subsequently pulled out was enormous. Thinning is easier, however, than supplying a deficiency. The plants did not cease growing until harvested. He had a specimen of the roots analyzed, and they were found to contain the same amount of saccharine as the sugar beet, grown on a different location.

Mr. P. adds, that mangels, under the same circumstances, produce at least 33 1-3 per cent. more than sugar beets, and therefore are a much more profitable crop. When sown early, they are a sure crop, and if the soil is well manured, the leaves soon cover the ground and check the growth of weeds, and he says that they produce more than any other root for the labour invested.

Of carrots he had four acres, which produced 117 tons. His flat turnip crop was also large. This was the result of kelp, with manure and good husbandry; the former is thrown up in abundance on the island, all of which is saved and composted, or else ploughed in, and thus composted in the soil's tilth. There are also large supplies of manure from stables and piggeries. Thus has good husbandry, by the aid of the sea and the stable, converted a once barren isle into an exceedingly productive farm. The Garden Committee of the Massachusetts Horticultural Society, of which W. C. Strong acted as chairman, awarded to Mr. Payson a gratuity of $25, in consideration of his extraordinary mangel and carrot crops.—*Boston Cultivator.*

## The Effects of Snow on Agriculture.

[CORRESPONDENCE OF THE "WEST BRITON."]

SIR,—There is an opinion generally entertained that a covering of snow protects the tender blade of wheat, and shelters young grass plants during the severe cold. The present invasion of snow, and a very low temperature continued for many days, has afforded a good opportunity to investigate this subject; and I now send you the results of some observations made near my house, at a height of 190 feet above the sea. The deductions are interesting from a scientific point of view, and may not be without a valuable practical application.

The thermometers used were first tested by a Kew standard and with each other, and were placed as follows: No. 1, on the surface of the grass, under four inches of snow. No. 2, in the air, one inch above the surface of the snow. No. 3, in the air, four feet above the surface of the snow. The two thermometers in the air were freely exposed and uncovered; but no ray from the sun could touch them, and the air was dry, without snow or rain falling.

I will not trouble you with the various readings of the instruments, but will only give the results deduced from them.

During the day time, when the general temperature of the air was little above the freezing point, the air at the surface of the snow was 4 degs. colder; and under the snow the thermometer remained steadily at 32 degs., the freezing point. The snow the first day or two of its fall was in a melting state at its base both by day and night.

The night of the 15th was very cold, and the minimum of the thermometers stood at No. 1, 28 degs.; No. 2, 10 degs.; No. 3, 15 degs. The air on the surface of the snow was 5 degs. colder than four feet above it; and the surface of the soil was 18 degs. warmer than the surface of the snow. Thus a coating of only four inches of snow so repelled the cold that there was a difference of 18 degs. between the two sides of the thin snow bed, an amount of heat equal to the difference of the mean temperatures of January and June in Cornwall.

We may, therefore, arrive at the conclusion that a covering of snow tends greatly to shelter young vegetation during periods of extreme cold, and that its beneficial effect in this respect has rather been underrated than otherwise.

The steadiness of the temperature under the snow, compared with that of the air, further tended to protect the plants. The sap vessels of vegetable fibre are burst and disrupted by the variations of frost and thaw. If a frozen blade of wheat be held between the eye and the sun, the ruptured state of the vessels may be distinctly seen. In this respect also the snow is a great preserver.

The air on the upper surface of the snow at night is intensely cold; on a calm night the minimum thermometer fell as low as 8 degs.; and when this great cold is intensified by a wind from the N.E. sheep and cattle (especially the young stock) exposed in the open field to its influence must suffer both in constitution and in weight. Heat is to some extent an equivalent for food, and the exposure to such a low temperature will often do more injury than many weeks of generous feeding will restore. Shelter should be provided by straw-yards and open linhays.

The observations further show that a snow bed mostly rests on a melting base, and the often rapid disappearance of snow mainly results from the continued waste of its lower stratum. That this must be so, unless the ground is first chilled by severe frost, is evident from the following considerations: The mean temperature of the soil in January at Truro is 45 degs., of the River Allen 46½ degs., and of deep-seated springs 52 degs.; thus the crust of the earth contains a body of heat which no transient superficial cold can nullify, and the effect of frost is repelled from its outer rind by a power far more steady and effective than a stratum of cold air. The snow acts like a blanket, and retains the heat; it in no way creates it. There is also a vague notion that snow has a manuring effect. But this appears to have arisen from observing that wheat which has been protected by snow grows much more rapidly afterwards than that which has been exposed to severe cold. But this arises from the plant being uninjured, both in blade and root, compared with the broken sap-vessels of the exposed plant. In the same manner a thin covering of straw keeps the plant warm, and greatly promotes the early and rapid growth of spring grass.

NICHOLAS WHITLEY.

TRURO, Jan. 19, 1867.

## Surface Manuring.

I believe in it. I cherish the belief that surface manuring is *the way* to manure. Every farmer aims to enrich his farm. Let me tell him in a few plain words how to do it, and then, after reading this plan, let him think over his past experience in farming, and see if it does not corroborate what is said here.

Apply manure chiefly to your tillage lands while in grass. By so doing you produce a strong, stiff sward, filled with grass roots. If these roots are of clover, so much the better. If you succeed in growing a good crop of grass on a poor soil you have done two things —made your land much better, and gained a good crop. As soon, or before the soil begins to show signs of failure, plough or manure again. If you plough you have a wealth of grass roots decaying for the food of growing crops. Re-seed before the land gets exhausted, and do it bountifully. If you scrimp and starve elsewhere, don't do it when seeding to grass. Aim to have a sward as early as possible. To accomplish this you should seed liberally. When the sward is formed you have another crop of manure to plough under. In seeding land it is better not to be confined to one kind of grass. In this manner lands may be managed for centuries without any material deterioration.

As a further argument in favor of surface manuring, I mention that it is Nature's way. The soil is on the top of the earth, irrigation deposits its fertilizing elements on the surface. Manure applied to the surface is acted upon by the light, heat and rains—its elements are much more slowly evolved in the earth than on the surface. Every farmer should investigate this subject for himself and make his own conclusions.

G.

STEEP FOR SEED WHEAT.—The agricultural editor of the *London Field* recommends the following pickle for seed wheat, which, although too late for use at present, may be submitted for record and reference: Take a half hogshead and fill two-thirds full with a solution of caustic vitriol (six gallons of water to four pounds of vitriol); put into the tub a suitably shaped wicker basket capable of holding one and a half bushels of wheat; pour the wheat gently into the basket. All light and defective seeds will float on the top, and can be skimmed off. This being done, the basket is raised out of the water and allowed to drain a minute or two, and then emptied on to the floor and left for a night to dry. Eight bushels of wheat can be pickled in from fifteen to twenty minutes. Seed is generally pickled the day before it is intended to sow; but it does not signify if it is done earlier, and we have heard of some farmers who dressed all their seed wheat at the commencement of sowing time. The seed should be as even as we can obtain it, and if it contains light taily corn, it will answer to blow it over and remove all the poorer part.

FROST HELPS THE FARMER.—In this climate winter rarely sets in until from frequent and heavy rains the ground is pretty thoroughly saturated with water. It would be a misfortune to the agriculturist to have the soil freeze solid and permanently for the season on the heels of a drouth. Wells and springs would fail in the winter time, and the action of frost could not prove so beneficial to the land as if larger quantities of water were present in it. Few take note of the actual effect of freezing and thawing upon all kinds of soil, more especially on the heavy, and therefore more retentive ones. These most need the action of the frost, and nature has provided for them to receive it to a greater extent than light, porous soils. The water is dispersed through all the pores of the soil, and by its expansion when frozen it cracks, pulverizes, lifts apart the particles from each other, to a more minute degree than it is possible to accomplish by any machinery. While this action is favourable to the extension of the roots of plants, it doubtless sets free much plant food which is physically so combined as before to be unavailable as fertilizers. So the looser the soil is left before winter the better will be the action of the frost upon it. On heavy lands, spaded gardens and ploughed fields late in autumn are signs of good husbandry.—*Rural New Yorker*