

the very shallow surface soil, and at the same time so improve the sub-surface that from being sterile it would become productive. Good farming demands a provident preparation of the soil for other years as well as for the present.

Deep subsoil culture implies a culture not merely of eight or ten inches, as a general plowing of soil suitable for that depth. If beneath that depth there be a subsoil so tenacious that the water reaching that depth cannot penetrate it, as is often the case, it is necessary to break up that stubborn subsoil if we would force our fields to give the abundant increase that is within our reach. Let us, however, bear in mind that deep subsoil plowing by itself will not effect the desired improvement. Rain water must have a means of escape from the land, whether that means be natural or artificial. Deep subsoiling and thorough draining, where needed, mutually aid each other in the improvement of the soil. In stiff, wet land, subsoil culture without drainage would but enable the water that would lie stagnant on the subsoil to stagnate within it, and stagnant there it would greatly diminish the productiveness and retard the maturing of the crops. Whereas, if the rain water be enabled, in consequence of the subsoiling and drainage, to filter through deep soil and escape by the drains, it brings, in its descent from the atmosphere and through the soil, the air so necessary for the preparation of plant food within the soil, accompanied with the needed moist warmth. It also dissolves those ingredients of the soil that are needed for plant growth.

The drainage system, however, will be a subject for future consideration.

There have been instances in which there has been no perceptible improvement of the soil from deep subsoil culture, but the failure to obtain benefit can be readily traced to other causes than the system itself. In an agricultural journal we have read an account of an experiment in deep subsoil culture in which there was no amendment perceptible over the land tilled in the ordinary mode. There was no difference in the crops in the fall; as soon as the snow passed away and the thaw would admit, the wintering and growth were examined, and no amendment could be perceived. The harvest showed no increase, nor could any benefit be traced to the subsoil, nor was there apparent benefit for the three years that intervened between the time of that plowing and the date of the report.

Why was there no improvement? Is deep subsoil tillage unprofitable—a mere waste of labor? We see at once in this report the cause of no improvement. "The land was deep clay loam, so much that the second plow, following in the furrow of the first, failed to bring up any hard pan, or hard, intractable soil; nor did it raise the subsoil to the surface, but only moved it to the depth of 12 or 13 inches, and for the most part allowed the crumbled earth to fall back from whence it was raised." We must infer from the report that the land was of such a quality, soil and subsoil, that no subsoil culture was needed; there was no "hard, intractable soil" to be broken up; the rain water did not stagnate on it, but percolated through it; the tap roots of growing plants penetrated it, and from it drew any additional nourishment needed. For this reason there was, after the subsoiling, no amendment perceptible.

Investigations by Prof. Marklyn and Mr. Cooper would seem to place rye before wheat in the scale of nutrition. They pronounce it one-third richer than wheat. Rye is especially rich in gluten. This corresponds with the generally received idea of farmers. In Pennsylvania rye has long been considered one of the most valuable cereals as food for horses, and in Europe it is held in high estimation for bread. It winters easily and thrives on a comparatively poor soil.

Home Industry.

Never was the importance of home industry more conclusively proved than it has been during the past year. In the United States and Canada, as well as in England, has the fact been more fully established that the wealth of nations is to be reckoned, not so much by the number of millionaires and the hoarded gold, as by the numbers employed and in receipt of fair, remunerative wages. The hive that has in it an undue proportion of drones must be weak, no matter how fair appearances may be. Drones must be fed on the product of the labors of the industrious and frugal. It is not enough for Canadians that our country raises and exports large quantities of raw produce. 'Tis true this is employment to some, but to only a few of those to whom agriculture and shipping afford the means of acquiring a competence. We should, for instance, manufacture more linen and woolen clothes.

Our neighbors south of the line are pretty well aware of the importance of home industry; and a great party there spare no exertion to stimulate the producing capacity of the country to its utmost. From the *American Miller* we take the following extract indicating their policy: "The wheat crop of the United States was estimated last year at 246 millions of bushels, of which the eight States of Ohio, Michigan, Illinois, Wisconsin, Minnesota, Iowa, Missouri and Kansas produced 176 millions. Our exports for the year 1876 were upwards of 55 millions of bushels, of which upwards of 42 millions of bushels went to Great Britain, while our corn exports for the same year only were nearly 50 millions of bushels, Great Britain taking the same amount of that as of wheat. Leaving 20 millions of bushels for seed, the millers of the United States must have manufactured the past year about 38 million barrels of flour, of which were exported 4 million barrels. *If we had manufactured the 55 millions of bushels of wheat we exported into barrel flour, it would have made over 12 millions of barrels, given employment to at least 10,000 men, and supported 40,000 or 50,000 people.* Three-quarters of these men would be employed in getting out cooper stock and in making barrels."

In order to promote the prosperity of the Dominion the great aim of our Legislature should be to provide, as far as possible, remunerative employment for every man who is able and willing to work. To this, first, due support and encouragement should be given to our manufactures, that Canada may be self-supporting, and second, in any commercial treaty the great object to be attained should be to extend the market not merely for the raw produce of our fields, mines and forests, but for such commodities as would give most employment to our industrious fellow-countrymen. Let our exports not be merely wheat and barley, wool, flax and ores—let them rather be meat, butter, cheese, linens, woolen cloths, agricultural implements and cabinet work. Let our great aim be to promote home industry and prove ourselves worthy in every respect of the great empire of which we are proud to call ourselves a part, who, in like manner, fostered every branch of home industry till convinced (whether rightly or not) that fostering was no longer needed.

The *Colonial Farmer* says: "Lately, when at Van Buren, we were shown the buildings which were erected for a starch factory there, and were told that \$40,000 would be paid out for potatoes for the use of this factory this fall. This money will be distributed among the farmers living within ten miles of the village, and is an entirely new source of income to them—not a substitute for one which they have heretofore enjoyed.

"If," he says, "the Government was to collect

and disseminate information which would show the farmers what are the productions of farms for which there is the most certain demand, much would be gained. To do this experiment may be necessary. Take the article of starch. Perhaps correspondence would not conclusively settle the matter; but it would be an easy matter to buy a quantity of Aroostook starch and ship it to England or other places where there may be a demand for it, and after it has been tried by the consumers of such starch the question of profit in the manufacture could be settled to a certainty. The introduction of starch factories into New Brunswick would work a revolution in agriculture. Increase the potato crop, and if the experience of other places is any criterion, you decrease the buckwheat and increase the wheat crop. Almost as a matter of course comes an increase of live stock, which means better farming and richer farms. An active cash demand for produce will lead to the proper appreciation of agriculture as a department of industry, that is, to the establishment of the wealth of the country upon its true basis."

Ground Bones as a Fertilizer.

Mr. C. an old English farmer, now farming in London Township, tells us what he knows of the use of bones as a fertilizer, having used them on the farm he now occupies, and having previously used them extensively in England. Five years ago he applied to a large field coarse broken bone at the rate of two hundred weight to the acre. For three years the effect produced by them was not great; it did not pay him for his labor in breaking and applying. Two more years have elapsed, and he finds the effect of the application. These two years his crops have been, from the effect of that application, very heavy. Coarse broken bones, he says, are an excellent fertilizer in England, as there the climate is so moist, they soon become dissolved and their fertilizing properties available as plant food; where as here in Canada it takes a long time to dissolve them, owing to the drought of the climate. Not so, he says, with bone dust. It is speedily dissolved and served to feed the first crop after its application, as well as succeeding crops. It is for that reason more valuable. A farmer, as well as other business men, needs to receive some remuneration for his outlay, without having to wait years for it. A farmer must wait for months for a return for his outlay at the best; an enterprising, improving farmer often much longer; and when a few months may bring in as good a return as years, as is the case with bones ground fine instead of broken, it is well to avail one's self of the means of securing a speedy repayment of money and time expended.

The benefits from the use of bone-dust as a fertilizer are told by a correspondent of the *Ohio Farmer* as follows:—

I have personally seen much of the good effects of this fine ground bone, and notwithstanding Mr. Manchester's statement that the bone is slow in action, I have known of many results from the use of the bone on the wheat crop more astonishing than the one he refers to. I have known of almost total failure of wheat, when alongside the bone has brought a good crop. I knew of an instance last year where there were 21½ bushels wheat to the acre on the boned part, and only 3½ bushels without the bone. Out of a seeding of twelve acres, a neighbor of mine has no grass except where he sowed the bone. When the bone was applied the grass is dark-colored and vigorous.

All the various makes of phosphates and superphosphates, as well as bone manures, have been experimented with in section with good results, generally; sometimes there have been failures, but I have never known of an instance of failure when this bone has been properly applied to wheat by being drilled it with grain, or when ap-