

crop. He did so, with the following result:—

Organic matter.....	2.43
Hydrate water.....	2.60
Carbonic Acid.....	0.92
Silica.....	81.26
Per oxide of Iron.....	3.41
Lime.....	1.28
Alumina.....	3.53
Sulphuric acid.....	0.09
Phosphoric acid.....	0.33
Magnesia.....	1.12
Potash.....	0.80
Soda.....	1.50
Chlorine.....	trace.
Loss on analysis.....	0.63
Total.....	100.00

In so small an amount as 100 grains, this soil shows an appreciable quantity of each element, (14 in number,) found in perfect wheat plants. And yet, four-fifths of the soil is nothing but silica, or pure flint sand. The proportion of silica is about the same as we find in our best wheat soils in Wheatland. It differs from them in containing more *soda, potash, phosphoric acid*; while the amount of lime, magnesia, alumina, oxide of iron, and chlorine, correspond very exactly with the results of our own analysis. We have, however, never so small an amount of organic matter (vegetable mould) a 2½ per cent. The fact that over 90 bushels of wheat can be grown on an acre with so little organic matter in the surface soil as 2.43 per cent. is worthy of mature consideration by those that desire to prepare their land for producing large crops of wheat at the least expense. It is not *vegetable*, but *mineral* matter that soils lack to give a large yield of plump wheat. An abundance of mould will increase the growth of *straw*, but not of *grain*. To promote the growth of the latter, no one thing is so valuable, as a general rule, as that of *bones boiled to a powder in strong lye*. To this the addition of gypsum and common salt will be of great service. The phosphate of lime contained in bones is an indispensable ingredient in forming the seeds of the wheat plant. The gluten in grain contains sulphur, which the sulphate of lime (gypsum) will furnish. The plant also needs potash, soda, magnesia, and Chlorine; all of which the common salt, and ashes leached to obtain lye, will supply. The liquid excretions as well as the dung of animals, abound in elements most useful in forming wheat. But an excess of manure will be ruinous to the crop. And *why* this is so, let us now consider. Suppose, for an experiment, one should make 2,000 lbs. of ripe wheat, including both straw and grain, into a heap of manure for feeding a second crop of wheat plants. Let this manure be spread over the ground eight or ten inches deep, so that the plants would have to organize their tissues, seed, &c., from the appropriate elements contained in the manure. Could a large yield of good seeds be thus grown? We think not. Why not? Every thing the kernels of wheat need, as well as all that the stems and leaves require, would be present in great abundance. The difficulty is this: Nature designs that this plant shall derive from the *atmosphere*, through the medium of its roots and leaves, a large portion of the carbon, nitrogen, oxygen, and hydrogen, used in organizing its seed. Hence, to feed wheat plants with an excess of these elements in rotting manure, is to inflict a *surfeit* and *disease* upon the same. All organized beings, whether vegetable or animal, may be injured more or less, by having an excess of nutrition thrown into their systems. Wheat can endure this surfeit far less than corn, oats, or barley. There is a *natural limit* beyond which we cannot force any plant or animal, by the use of its most appropriate food. But in regard to wheat culture, we are far behind the maximum of product consistent with the highest profit. Something can be gained on most farms, by the droppings of domestic animals, applied directly to wheat fallows. They are not generally too rich for a dose of barn-yard manure; especially if it be well rotted, and contain an admixture of gypsum, salt, ashes, and lime. Don't spare the clover seed, the plaster, nor the leached ashes, where you wish to enrich your soil.

From the Genesee Farmer.

DO VARIETIES OF PLANTS HAVE A PERIOD OF NATURAL EXISTENCE, AND CEASE TO LIVE, LIKE INDIVIDUAL PLANTS AND ANIMALS?

This has become a question of great practical importance, as well as one of much scientific interest. A majority of Physiologists regarding the existing Potato malady, which prevails so alarmingly in Ireland and Great Britain, as the effect mainly of constitutional weakness, in varieties of the plant, indicative of the approaching extinction of such varieties, on the face of the earth. The loss of vital energy has been increased, and hastened, it is believed, by the practice of an unnatural and injurious course of cultivation. Mr. Rogers, of Dublin, whose researches are published in the Mark-Lane Express, and received with respect and commendation, attributes the decay and widespread dissolution of potatoes, to the general custom of allowing them to germinate and form sprouts, of greater or less length, which are broken off before planting. The production of these germs, or rather their growth or waste, consumes a portion of the vital force, as well as nutritive elements of tuber, which are utterly lost to the succeeding generation. In any single crop the loss is of course not great; but carried through many successive generations, the injury can hardly fail of being very disastrous to the constitutional vigour of the emasculated, or mutilated race. As the disease prevails to some extent in our own immediate neighbourhood, and has received attention and study at our hands last season, and the year before, we venture a few suggestions in addition to those made by the distinguished Irish chemist.

When the germ or seed of a tuber begin to organize the elements that surround it, and fully develop a new living being, nature provides it with a peculiar nitrogenous substance called *diastase*.—This substance is not unlike the fluid found in the stomachs of young animals, called gastric juice, or rennet, which aids in dissolving their food. It has the remarkable power of converting 2,000 times its weight of *insoluble starch* in potatoes, or seeds of grain, into a *soluble gum*, to nourish and build the embryo germ into a perfect plant. After the first leaves are formed, nature having no farther use for diastase, it ceases to exist. To sprout a potato in a warm cellar or pit, and break off the sprout, is to waste this vital agent, so indispensable to the healthy nutrition of a new living being. Mr. Rogers has found by experience that potatoes are exempt from rot, if planted late in autumn, and never disturbed in the spring, but cultivated as if planted at the latter season.

It has long been a source of deep regret to us that the study of vegetable physiology, and of the diseases incident to cultivated plants, is generally so little relished, and so unpopular, in the farming community. Hence we write every sentence that relates to this science, in the fear of not being understood, of exciting the disapprobation of many of our readers. But we must still crave their indulgence, while we pursue the discussions of this subject a little farther.

The premature development of the germs of potatoes is only *one*, and that perhaps the least injury, which thoughtless cultivators inflict on this invaluable plant. They omit to place within reach of its roots those *alkalies* and alkaline earths, without which, no healthy and perfect tubers can be formed. According to the most reliable analysis an acre of potatoes, tops and roots, weighing 7,870 lbs. dried, require in their organization 193 lbs. of pure potash and soda. Ashes and common salt will supply these elements; but the others are also needed, which a little gypsum and bones will furnish.

Nothing is more certain than the fact that, to withhold from any being, whether vegetable or animal, its appropriate food, is to impair its constitution, and expose it in an eminent degree to become diseased and destroyed by injuries, whether by insects or other agents, that would fall harmless on well fed, strong, and healthy systems. A violation of the laws of organic

life will be fatal, sooner or later, according to the extent of such violation, not only to particular beings, but to the *family* in which the injured individual is a connecting link between the past and the future. From this cause, many families in the highest class or genus of beings, that of man have become extinct, although once endowed with great vital force. For wise purpose, God destroys families that, from generation to generation, consume more than they produce, in idleness, extravagance, and vice. This is doubtless done to make room for the expansion of families, distinguished alike for their industry and temperance, and the physical, moral, and intellectual strength which labour and virtue always confer. If we view human action in its proper light, it will be found impossible, in the order of Providence, for man to inflict injury upon others, even on a potato plant, greatly needed as it is by the poor, without bringing on himself or his offspring a greater injury. But it is unnecessary for us to moralize on this subject; although morality and agriculture are more intimately connected than many suppose. Without any especial violation of natural laws, we have no doubt that varieties of plants as well as animals will one day cease to have any living representatives on the earth. The researches made in that department of Geology called *Paleontology*, which investigates fossil plants and animals, leave no room for doubt in regard to the extinction of many races, that have flourished for thousands of years on the globe. Hence, our able cotemporary, Mr. Beecher, editor of the *Indian Farmer and Gardener*, expresses a general truth too strongly when he says in a recent article,—“Any *one tree* may wear out; but a *variety* never.” A family of plants, or a variety of such family, may endure for indefinite ages. But in the ceaseless progress of time, an epoch will arrive when this family, like all the extinct families, from the recent mastodon downward, will have no living representative to perpetuate its lineage.

We cannot dismiss this subject without remarking that constitutional weakness in the potato plant can be remedied as well by propagation from the genus in the tuber, as from the seeds in the ball. The vital principle is as feeble, as much exhausted in the one organ of the being that forms embryos, as in the other. If vitality be lacking in the germ found in the potato or tuber, it cannot be more abundant in the seed. If plants germinated from seeds appear more healthy and vigorous than those from the tuber which gave the seeds, it is owing to extraneous circumstances, better care keeping, less exposure, or some other incident. Unwise culture is only the predisposing cause of the potato rot; while the active agent exists unseen, and unappreciable in the atmosphere, like “the pestilence that walketh in darkness.” We have good reason for the remark that, by supplying the crop with the precise ingredients required to form it, in its perfect state, and at the same time avoiding the bad practice of sprouting before planting, the peculiar malaria, insect, cryptogamic, or parasitic plant, or whatever else may complete the work of destruction, will pass harmless over the potato field.

CANADA FARMER.

August 14, 1847.

MR. BUCKLAND.

We learned the other day, with surprise, that this gentleman has been in Toronto nearly a month. If he expects to do any thing in Canada—to be looked up to and respected as an intelligent labourer in the field of agricultural improvement—to be regarded as a thorough go-ahead, independent man, who has come here to take up his abode and hereafter to consider himself a Canadian, he must not keep *hid up* in this style, nor surrender himself into the hands of any man or set of men, nor go about negotiating for gifts, grants, assistance or favour, from Government, but must strike out boldly for himself and trust to luck and to the just unexception-

able claim which merit gives—that claim which the man who *has done something* at a personal sacrifice can prefer. The principle of making appropriations of the people's money to advance private enterprizes, especially *before* they are undertaken, however much the *public* may be interested in their success, will not be sanctioned. At all events a large party would oppose it, and the result would be distrust of the objects, and disregard for the benefits of such enterprizes.

We have understood it to be Mr. Buckland's intention to establish an agricultural school and Model farm in this vicinity. It is also said that he is a candidate for the Chair of Agriculture (when it is established) in the University. He can hardly accomplish both objects. The former we believe would succeed, if established on an independent untrammelled footing. It would probably be necessary that Mr. B. should spend a year in studying the character, wants and capabilities of the country. The latter will be a failure so far as the public are concerned. It may be bolstered up by public money; the Professor may pocket his salary very comfortably every year but as to any practical benefit to the Farmers of Canada it is “all in my eye.” They will never send their sons whom they intend for farmers, to a University to learn their business. A hundred objections would be raised at once. Their being required to send them into the city would of itself be enough; besides, the antagonisms—the conflicting elements in the very nature of the thing would cause it to explode in a short time. A few pupils might be found among the sons of “gentlemen” farmers, as they are fond of being called, but we believe their ranks would soon grow thin. This is not the way to promote improvement in farming throughout the Province, nor have we much idea that it will be attempted. The University will very likely be settled on an improved basis at the next session; the improvement being the removal of the Theology Professorship, and a reconstruction of the Board of Management, with one or two other minor alterations. This seems to be in accordance with the opinions and wishes of the majority of both political parties, and we venture to say of the majority of those who are not particularly connected with either. The separate establishment in each District of a Grammar School, with an Agricultural department and model Farm attached, will no doubt be provided for from other sources, and we shall then want a model Farm and a model Institution near Toronto, presided over by such a man as Mr. Buckland, to prepare teachers for these various District schools, and to instruct the sons of the enterprising farmers of the Home District in the theory and more correct practice of their art. This will furnish a field sufficiently large and varied for one man.

THE POTATO INSECT.

The potato rot has been ascribed to a hundred different causes, each of which in the opinion of its propounder was sufficient to account for the evil. An insect has been the great destroyer in the opinion of many persons; but this insect has assumed as many shapes as Proteus, and its colour is as variable as the chameleon's. One time it is a long white worm or grub scarcely perceptible to the eye in the substance of the tuber; another time it is in the stalk in a different form; now it is a small black insect (in this neighborhood) which punctures the leaf. Every unfortunate 'ry or grub that has been seen in the vicinity of a potatoe patch has been apprehended and without being allowed to give an account of himself or even to prove an *alibi*, has been thrust into a box, and condemned as the guilty “individual”—the *outrageous varmint* that had killed the “praties” in every country of the earth; at St. Petersburg and at the Cape of Good Hope; in the “Islands of the Sea” and throughout the continents of the old and new world! This omnipresent, felonious outlaw, underwent a critical examination by ourselves yesterday morning, and