



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 regard 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 wide-spread 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 and waste, consumes a portion of the vital force, as well as nutritive elements of the 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 vigor of the emasculated, or mutilated race. As the disease prevails to some extent in our own immediate neighborhood, 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 of a seed or tuber begins 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 the seeds of grain, into a *soluble gum*, to nourish, and build up 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 cherished, and so unpopular, in the farming community. Hence we write every sentence that relates to this science, in the fear of not being understood, and of exciting the disapprobation of many of our readers. But we must still crave their indulgence, while we pursue the discussion 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 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 purposes, 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 labor 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 *Palæontology*, 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 contemporary, Mr. Beecher, editor of the *Indiana 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 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 germs 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.