

(For the Scientific American.)

Observations upon Planting, Cultivating, Digging, and Cellaring Potatoes.

Much time and writing have been uselessly spent upon speculations as to the cause of the potato rot, while but little has been purposely said which will benefit the man engaged in raising potatoes for a crop. My attention, since 1845, has been directed to the search after the rot, and also to the best method of raising sound potatoes. In the former, my opinion must gain a certain credit, from the fact that, in the latter, I have been perfectly successful. If my readers will pursue the course of cultivation recommended in the following paper, they will certainly be benefitted to the extent of growing sound potatoes, let their notions of the cause of the rot be what they may.

The cause of the potato rot, in my humble opinion, is to be found in the mismanagement of the tubers ever since their cultivation as esculents. Probably the seed of no article of general cultivation has been so much abused, year in and year out, as that of the potato. Sir Walter Raleigh, in the reign of Elizabeth, has the credit of introducing the potato from South America into England. Macaulay, the historian, informs us that, in the reign of James II., one hundred and seventy-six years ago, "the potato had become the food of the common people in Ireland." It has certainly been planted and used as a general article of food, and almost a necessary of life by all civilized nations for a period of at least one hundred years. In those countries of Europe where the winters are not severe, the potatoes, after being dug up in the Fall, are buried in "graves," and suffered to remain there till late in the spring, and then bared, when they are usually found to be a solid mass of sprouts and potatoes. To separate the potatoes from the sprouts is generally the work of women and boys; and the writer, when a boy, well remembers "sprouting potatoes," in old England. The mass of organic matter thus annually taken from the constitution of the potato may be imagined, when the heaps of sprouts generally exceed the heaps of potatoes in bulk. And, reader, remember that these sproutings, these fillips at the constitution of the potato, have been perpetrated year by year for nearly two centuries. Does nature, in any of her teachings, instruct us to deteriorate seed by sproutings, or cut sets, or any other act which can and will wear out the original organism? Does she not directly teach us, by consequences as startlingly legible as was the writing on the wall of Belshazzar's palace, that, if we intend to procure superior specimens of plants and animals, that we must not employ inferior agents? Does any common-sense farmer sow the tailings from the fanning mill, with the expectancy of reaping a rich harvest of plump clean grain? Does he preserve the imperfect nubbings, the patrimony of squealing pigs, for the express purpose of planting, in the earnest hope of husking a premium crop of corn? No! He sows from his best and cleanest grain, and plants from his soundest corn. But mark the contrast. When he plants a field with potatoes, why does he pick out the meanest and smallest for seed, and even cut them into sets and eyes? Because he is led away by example and not by judgment; because crops heretofore have been fair, he rashly thinks they must be fair for ever! Inhabitants of earth! but little inferior to the angels, where has been and where is now your cunning, skill, and knowledge? After transgressing the laws of nature, you are now receiving the immutable penalty, and in seeking after a remedy, instead of looking down at your feet, you are intently gazing at the clouds. Instead of studying, cause and effect, transgression and consequences, you are vainly expecting some one, fore-ordained of heaven, a second Jenner, to work out a cure upon the distempered constitution of the recklessly injured, wantonly misused potato. The disease has proceeded from yourselves, the remedy must proceed from yourselves also.

For the benefit of those who are anxious to live and learn, I will now detail my system of planting, cultivating, and preserving the potato. They can adopt my ideas and method, or not, as seems to them best, but one fact is certain, that if the seasons turn out ordinarily

wet, it will be useless to plant potatoes in the expectancy of a sound crop, unless strict attention be paid to the preparation of the soil and time of planting, quality of seed and mode of cultivation, time of digging, and method of preserving during winter.

First, PREPARATION OF SOIL.—The best soil, in my opinion, for the growth of sound potatoes, under all seasons, is a sandy oam, resting upon a porous subsoil, with the surface flat and sloping just enough to carry away the water proceeding from a heavy fall of rain. But as every farm will not give us this peculiar soil and situation, we must make the best use of what we have, keeping in view one fact, however, that it is useless to plant potatoes in low wet ground, for they will surely rot. The best plan is for a farmer to set apart four acres of his highest, driest, and strongest land, and plant one half of it the first year with corn, taking care to plow under a heavy coat of cow dung; the remaining half he can sow with any grain that will give a fair crop. If the soil have been run hard previously, let a top-dressing of twenty bushels of lime to the acre be applied. The year after let him plant with potatoes the half that was corn, and let the half that was grass be planted with corn, and manured if necessary. When plowed for potatoes, the lands ought not to be more than seven paces wide, and plowed eight inches deep, and after planting, the dead furrows ought to be plowed out beam deep. By thus taking an alternate crop of corn, potatoes, and grain, and manuring for the corn only, he will keep one half this patch of land in most suitable condition for raising sound potatoes. This system will require the land to be manured every five years, enough if a good heavy coat be plowed under.

Second, TIME OF PLANTING.—The best time for planting, in my opinion, is the Fall of the year—say the last week of September in Central New York,—but as Fall planting, in this country is impracticable, on a general scale, unless other crops be neglected, the best time for planting is as soon as the land can be fitted in the spring. Late planting is a serious error, for it is much more natural for seed potatoes to be in the ground than sprouting in the cellar, or wilting on a barn floor. And it is a fact, that the potato tops, whether planted in April or June, generally show symptoms of disease in the last week of August, after which event the young tubers discontinue growing. Therefore those potatoes which are planted the earliest will have the longest time to grow, and consequently produce the largest tubers, and the heaviest crop. In times, before the appearance of the rot, the potatoes were generally planted in June, and the tops continued green and growing till nipped by the October frosts, thus allowing full four months for the growth of the plant; but, as things now stand, if we wish the same time of growth, we must plant as early as possible. The soundest and highest colored potatoes I have ever grown, were self-planted in the Fall, or what we term "volunteers," and this is a great fact in favor of Fall planting.

Third, QUALITY OF SEED.—Some of the choicest kinds of potatoes at the present time are more inclined to rot than some of the meanest and coarsest. Unless much attention be paid to cultivation, these choice kinds will soon become extinct, for a farmer who plants for a crop will soon only plant those kinds which will produce sound. I would advise the farmer to plant from those kinds which appear to stand the rot the best in his own immediate neighborhood, and not be captivated with the ideal reports of qualities of potatoes grown some 100 miles away. After determining to plant the soundest kinds of potatoes, let him select whole sets of a medium size,—a common hen's egg being a proper gauge. The smallest and the largest, although capable of producing well, are not, in my opinion, as desirable as even moderate sized seed. But under all and every circumstance, avoid planting cut sets, eyes, and peelings. The fact that sound crops have been and are now produced from cut sets, is no more an argument in their favor, than a previous sound constitution, or a week's hopeful recovery, is any sign of a permanent cure of a consumptive patient. In Central New York the "pale reds" and early "pink eye," are considered the least liable to

rot, and the common "pink eye," "Philadelphia," and "Carter's" the most liable. For a general crop I would recommend the "pale reds," for early use the "early pink eye."

Fourth, TIME AND METHOD OF CULTIVATION.—After the ground has been plowed, and has become sufficiently dry, let it be dragged over once, only just enough to level the comb of the furrow slice. Then take a marker and set out the hills four feet apart, centre and centre. Plant two sets, 9 inches apart, in each hill, and place them in the same direction as the dead furrows. This will allow the cultivator to go lengthwise of the lands, and may cut within 3 inches of the sets. It is not wisdom to drop the sets on a heap in a little hole for the purpose of letting the cultivator go both ways. Plant the sets on the top of the ground, scatter on them one handful of air-slacked lime, and cover them up with two inches of soil. Many farmers will condemn this method, for, say they, if a dry season come, your potatoes will be very small. But it must be remembered that these dry seasons come very seldom, whereas ordinary wet seasons are what we have to guard against in attempting to grow sound potatoes. Early planting, to a certain extent, also disarms this objection. As soon as the rows of the young plants can be discerned by their leaves, let the cultivator be put through the rows, taking care to gauge the teeth so that they shall cut as near as possible to the sets without actually upturning them. The more care taken in marking out truly, the easier and more complete will the cultivator work. The advantages of the spring steel-toothed cultivator over the plow and hoe are known to every one who has used both. If the season be forward and growing let the cultivator be put through the rows again in about a week's time after the first cultivation. The object in cultivating is to keep the soil light, open, and lively so that rain water can percolate freely, and the sun have a proper effect in warming up the soil, so that when you hill up, the new plants shall be supplied with a covering of soil in the very best condition for supplying and nourishing all the elements of re-production.

As soon as you perceive that the tops are almost large enough to drop, put the cultivator through once more twice in a row, and let the teeth cut down as low as 6 inches, and then, with the hoe, let the hills be formed of a proper shape, not high and conical, but flat and shallow, and as large superficially as possible, taking care to have all the channels between hills open, so that rain water can have a free passage to the dead furrows. After making "grips," or small drains, in low flat places, with which our country abounds, the farmer has done all that is possible for a healthy crop of potatoes. The result will now depend upon the season. In a very wet season he will have to dig a few rotten potatoes, in a moderately wet season his crop will be certain and the tubers large; in a dry season they will be small, but all sound.

Fifth, THE TIME OF DIGGING AND METHOD OF PRESERVING DURING WINTER.—The best time for digging potatoes is just before the heavy Fall rains, say the last of September or beginning of October. I have preserved potatoes in "graves" during winter, by putting over them two alternate coats of straw and earth, and this is the only method that can be pursued if cellar room be wanting. Whether they be buried up in "graves," or put into the cellar, be sure to sprinkle a handful of air-slacked lime over each bushel-basket of potatoes. All the good done by the lime, in my estimation, is its effect upon the mould or fungus which adheres to the runners and the eyes of the tubers. Like the fumes of sulphur, it will destroy the fungi, but it will not alter the constitution of the potato; careful cultivation must do that.

In the spring, as soon as frost will permit, potatoes ought to be taken out of the cellar and spread over the barn floor in a layer not more than 9 inches thick; this will prevent any injurious sprouting before planting time, and although those potatoes which are intended for early summer use may wilt a little, still that is better than letting them remain in the cellar, a tangled mass of struggling vegetation. I may as well state that I never sell any wood ashes, but sow them on my potato ground and garden. Soil for growing potatoes cannot be

too rich in potash, as may be inferred from Boussingault's analysis of the ash of the potato and the potato top:—

Ash of Potatoes.	Ash of Potato Tops.
Carbonic acid, . . . 13'4	Carbonic acid, . . . 11'0
Sulphuric do. . . . 7'1	2'2
Phosphoric do. . . . 11'3	10'8
Chlorine, 2'7	1'6
Lime, 1'8	2'3
Magnesia, 5'4	1'8
Potash, 51'5	44'5
Soda, . . . (traces)	(traces)
Silica, 5'6	13'0
Oxide of iron, &c. 0'5	5'2
Charcoal and loss, 0'7	7'6
100'0	100'0

Every good crop of potatoes abstracts from the soil of potash, per acre of tubers, about 58 lbs.; of potash, per acre of tops, about 135 lbs. I would advise farmers to sow the ashes and not to drop them in or on the hill.

I have now done:—if these observations and deductions will induce a few good farmers to follow the course of cultivation laid down my labor will be rewarded. In this case example alone will work upon the masses, for they are, at present, too eagerly bent on finding out some quack remedy for a disease of which they know nothing.

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The Steamer Glencoe.

The cause of the explosion of the steamer Glencoe, which took place at St. Louis on the 23rd ult., has been ascertained to be the want of water in the boilers. This was owing to the culpable recklessness of the chief engineer, George Buchanan. This has been found out by the last statement of the assistant, engineer, Mr. Ryan. He stated that before reaching St. Louis, he tried the water in the boilers, and found it very low, and called to Buchanan and informed him of the fact, and received some evasive answer. He again tried the water, and again called to Buchanan, who told him to mind his business, that there was water enough in the boilers, and he would take her with it to St. Louis or to h—l. Not satisfied, Ryan expostulated, and Buchanan told him in substance that it was his (Buchanan's) watch, and that he (Ryan) had nothing to do with pumping up, and, moreover, that if he (Ryan) had his way, he would have the water from the boilers running out at the tops of the chimneys. Subsequently Buchanan remarked that the boat was making good time, and he would take her into St. Louis kiting. This was perhaps the last remark made, and when the boat reached the wharf, and commenced trying to effect a landing, Buchanan turned on a gauge-cock and let on the water. The instant the cold water came in contact with the heated boilers, now nearly dry, the explosion took place.

How to get Sleep.

How to get sleep is to some persons a matter of high importance. Nervous persons who are troubled with wakefulness and excitability, usually have a strong tendency of blood on the brain with cold extremities. The pressure of the blood on the brain keeps it in a stimulated or wakeful state, and the pulsations in the head are often painful. Let such rise and chafe the body and extremities with a brush or towel, or rub smartly with the hands to promote circulation and withdraw the excessive amount of blood from the brain, and they will fall asleep in a few moments. A cold bath, or a sponge bath and rubbing, or a good run, or a rapid walk in the open air, or going up and down stairs a few times, just before retiring, will aid in equalizing circulation and promoting sleep. These rules are simple and easy of application in castle or cabin, and may minister to the comfort of thousands who would freely expend money for an anodyne to promote "Nature's sweet restorer, balmy sleep."

The Dual Phenomenon.

A correspondent writes to the Philadelphia Ledger that there have been three cases of the dual phenomenon like the Siamese Twins. He mentions the three cases. If he should read George Buchanan's History, he would find out another and the most remarkable one in history.