

stirred a about with a stick from the bottom of the tank. That shows conclusively that the whole volatile principles of the manure are fixed, and neutralized, and prepared for application to the grass or other crops. Any one may see that even water alone put upon grass while in a growing state accelerates its growth, often in a very wonderful degree; and how much more may not be reasonably expected, from such a combination of the known elements of fertility, as such liquids contain. With a plentiful supply of such liquid preparation, which are within the reach of every cultivator of the soil, from the small garden to the extensive farm, there is nothing to prevent an increase of the crops of hay and fruit four-fold, at least, if people interested in such matters would give it a trial.

"I have been a practical cultivator of the soil for over fifty years, in different parts of the world, and it is only within the last five years that I learned the secret of properly preparing and applying liquid manure to growing crops; and since then, I have seen two, three, and even four crops of strong grass cut from the same ground in one season by the copious application of liquid preparations; and for that valuable discovery I have to thank Professor Liebig's familiar letters on chemistry; although deadly opposed to book-farming previous to that date."

T. C.

Healthy Potatoes.

In the present precarious state of the Potato, it is an important question—what can be done in spring to ensure a healthy crop? Much we believe may be done, though we are convinced that the disease is deeper seated than to be reached by any remedy short of the removal of that degeneracy which has resulted from the long cultivation of the plant by division of the tubers. The following suggestions are from a publication entitled "Contributions toward the Improvement of Agriculture in Nova Scotia," by Professor Dawson, now of McGill College, Montreal.

Agents in developing the potato disease.

—"The principal are wet and undrained soils, wet seasons, wet weather after warm dry weather, when the tops are fully grown; chilly nights succeeding hot days, rank manure in contact with the sets, want of attention to keeping the crop well tilled and free from weeds, run-out tubers long cultivated on the same farm. These and similar causes have evidently had an important influence in locally developing the disease, but none of them can be its general cause, since the disease often appears where all are absent, and these causes were quite as general as now, in former times, without producing any such consequence as the potato blight. Some valuable hints, however, as to the

best palliatives or temporary remedies for the disease, can be derived from these causes, in connection with the experience of farmers. Of these *temporary remedies or palliatives*, the following are very important:—

"1. *Early planting*, and planting early sorts; because this gives greater probability of avoiding the effects of autumnal chills and rains. This remedy has been found very effectual in Nova Scotia.

"2. *Change of seed*, especially from poor and cold localities, to richer and milder situations. The Scottish low country farmers have obtained excellent results by importing seed potatoes from the bleak and poor highland districts.

"3. *Selecting those varieties* which have proved *least liable* to the disease; and these will generally be found to be such as have been recently introduced, or lately procured from the seed.

"4. *Planting in dry soils*, and under-draining more moist soils, if necessary to plant in them. The dry, sandy uplands of King's County, have almost entirely escaped the disease, when the crop has been put in early.

"5. *Applying well-rotted manure*, and plowing it in, instead of putting it with the sets in the drills. *Guano* and composts made with *liquid manure*, have proved themselves better than stable manure. This and the two last remedial agents act by giving the plants a greater degree of healthy, general vigor, than they could derive from run-out seed, in wet soil, or in contact with rank manure.

"6. *Planting in new soil* and the use of *mineral manures*. It is generally observed, that the potato has been most healthy when planted in new, virgin soil, before the unskilful agriculturist has extracted from it the stores of alkaline and other mineral manures remaining in it from the ashes of the forest. The composition of the ash of the potato at once explains the reason of this, as the following table, taken from Johnston, will show:—

"Ashes in 10,000 lbs. of the roots and stems of the potato.

	Roots.	Tops.
Potash,.....	40.28	81.9
Soda,.....	23.34	0.9
Lime,.....	2.31	129.7
Magnesia,.....	3.24	17.0
Alumina,.....	0.50	0.4
Oxide of iron,...	0.32	0.2
Silica,.....	0.84	49.4
Sulphuric acid,...	5.40	4.2
Phosphoric do... 4.01	19.7	
Chlorine,.....	1.60	5.0
	82.23	308.4

"Here we have large proportions of soda, lime and potash; the latter forming nearly 50 per cent. of the ashes of the roots. Now these substances, potash especially, are plentifully supplied to the soil by the ashes

of the woods, and are usually deficient in exhausted lands. Hence, if we apply to run-out, or long cultivated soil, lime, wood-ashes, gypsum, (sulphate of lime,) common salt, (chloride of sodium,) bone dust, (phosphate of lime,) we supply it with some or all of the more important substances in the above table, and thus assimilate it to the virgin soil in which experience proves the potato to thrive best. I have found, by experience, that healthy potatoes (though not a large crop) could be obtained by planting with no other manure than a pint of unleached wood-ashes in each hill, in seasons when potatoes planted with ordinary manure were blighted. This is not intended as a recommendation to be followed on the large scale, but merely to show the effect of wood ashes in promoting the health of the plant. When ordinary manures are used, wood ashes may be placed over the sets on the top of the drills, but should not be in contact with stable manure or other rich animal matter.

"For the same reason it is, of course, unwise to raise successive crops of potatoes on the same soil. Whenever, on old land, a proper rotation of crops is not attended to, there is much greater likelihood of failure."

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Transactions of the Board of Agriculture for Upper Canada.

The number for January, contains as usual much local statistical matter, indicating vigorous efforts in the improvement of Agriculture, more especially in the departments of Agricultural exhibitions and improved stock. The address of the retiring President of the Association, David Christie, Esq., M.P. P., contains some very judicious remarks on the importance of a scientific education to young farmers, and more especially on the advantages which they might derive from attending, during winter, the course established for their benefit in the Toronto University. We fully concur in his views on this subject, and are happy to hear that there is every prospect of the institution of a similar course in Montreal next winter. We prefer extracting, however, as important at the present season, a portion of the address referring to the subject of rotations, green crops, and wheat culture:—

"Our mode of farming differs essentially from that now pursued in Britain. We have no course of rotation of crops, which is generally practised. The system there is the four years' course—turnips, barley, or oats, clover and wheat. Summer fallowing is seldom resorted to, as it is considered that the land can be sufficiently freed from weeds and grass by the hoeing and working of the land required for the turnip crop. The farmers of Great Britain have no difficulty in