

metals is left solely to the choice of the hardware merchants of Halifax, whose sole object is profit and not improvement in that very valuable implement—the plough. I have already stated that by the use of a grubber the work could be done much speedier and better. This is from the fact that it will take a three feet width at once, whereas a plough turns only eight or nine inches, and by its sole-plate running along the bottom of the furrow, leaves a hard polished surface on which the horses walk, which is very injurious to the soil, whereas the grubber's long teeth penetrate below this hard pan or surface and thereby give free access to air, moisture, or the roots of the plants, which is of the greatest importance to the growing plants. Our farmers in general are very willing to take hold of any improvement in agricultural implements if it can be introduced to them. The mowing machine and hay-rake have got into common use among us and no farmer will do without them where they are at all available. And I have no doubt but if your Central Board would only introduce the field and drill grubber they would be anxiously sought after by our Agricultural community in general as they would prove more useful in their own place than the mowing machine and hay-rake do in theirs.

Yours respectfully,  
JAMES GRAHAM.

ON THE CAUSE OF ROT IN GRAPES,  
POTATOES AND OTHER VEGETABLES.

PITTSBURG, PA., U. S.

To the Editor of Nova Scotia Journal of Agriculture.

SIR—Seeing in the New York weekly *Herald* part of an article on Diseases of Plants, copied from your Journal—I take the liberty of forwarding to you (as enclosed) my views of vegetable blights.

It is undoubtedly true that plants containing most nitrogen are most severely injured by blight, (as the horse bean or Windsor bean) and that the nitrogenous parts of plants show the injury more plainly than the non-nitrogenous parts.

The grape rot appears first in July, when the Catawba grape is nearly half of its full size. It shows itself by a little speck on the skin and a discolored appearance of the pulp underneath, usually on the exposed shoulder or side, and rarely on the underside. The part discolored has ceased to grow, and communicates its disease to the neighbouring parts, until the whole berry is affected, then dries up to a brown dead matter, which is sometimes blown or rubbed off, and at other times remains attached to the stem until gathering time. It is first noticed after thunder storms, and after and during wet, sultry weather. Whatever grapes escape

being attacked in July, if dry weather prevails afterwards, are not affected. The same wet, sultry weather will produce rot up to the time of gathering.

In October, 1865, when the Concord grape was fully ripe, and during the days of gathering, this weather produced rot; but seeing that the berry was full of juice, the rot showed itself by the breaking of the skin and fermentation of the juice.—Every part of the country where wet sultry weather prevails is affected by rot, in wet seasons destroying from half to nine-tenths of the crop; in all seasons destroying some. In dry, favorable seasons it has been noticed that some particular soils and situations are less affected than others. Tough, clayey and marly soils that are very retentive of moisture are most liable. Soils that are sandy or porous, are less liable. It might be thought that the limestone soils of northern Ohio would be sufficiently dry and porous to escape rot; but in fact limestones do absorb and retain moisture, and although the surface where exposed to the atmosphere in a current of air does dry rapidly, yet the interior surfaces in the interstices of the layers of stone are covered with moisture, and wherever clay intervenes it becomes a soil of the most retentive character. Sandy soils are unfit for raising wine grapes; thus it appears that all our wine soils are subject to producing rot. Those soils that are best adapted by their character to produce the highest development of the good qualities of the grape are most liable to rot.

With regard to situation it has been said (vide Cincinnati, 1848, report Horticultural Committee), that the cause of the rot in grapes was their location being in confined situations, not fully exposed to the air, and their proximity to orchards and woods. This is incorrect; vines running on trees escape rot; vines nearest the forest and orchard trees partially escape rot; vineyards that have never been hoed and so are full of weeds escape the full extreme of rot. So the most unfavorable situations for developing the qualities of the grape are the situations for escaping rot, and a premium is offered for careless cultivation and neglect. To sum up, the best soils produce rot and the most favorable situations produce rot, the worst soils are least subject to rot, and the most unfavorable situations are least liable to rot, and thence conclude, with this anomaly in nature, that its highest grade of produce is most injured by its most favorable provisions.

It has been remarked by some that the very cold nights and mornings that sometimes follow sultry weather, ending in rain, might produce and does produce frost and causes rot. This is incorrect, and need not be taken into consideration. It is worth while, however, to refute the proposition of some, that the sudden

check of growth attending this sudden change of high to low temperature produces rot, by remarking that the cold is never so severe as to stop the circulation of the sap, and so could not cause the death of any part of the plant or berry. A wet summer and our usual sun, then produce rot, and here again we must conclude with another anomaly in nature, that her most fruitful season is each most inimical to the grape crop. Shall we rest here, finding out that as the *New York Tribune's* Agricultural Report for August, 1866, says, "We are fighting against nature trying to raise grapes in Ohio;" give up the culture of the grape as under a curse, or vindicate nature and show that as wine, earth's highest product, may be made a curse by excess of its use, so this apparent curse of richest soil, best situations and most favorable season is a blessing when properly taken advantage of.

In God's province all of his gifts are good for man; the soil does its best, according to its capability furnishing solid food, the water does its best, serving as a diluent or disintegrant; the air does its best, acting as a digestant, and the sun does its best, settling all into activity, nourishing, warming, cherishing; no one of these does injury but only good; and shall they all when working at their highest product rest in evil? It cannot be—it can only be man's inability to take advantage of God's blessing. In an attempt to reason let us begin by saying that there must be no excess; if we give all soil, all water, or all air, or all sun, we shall have no product; or if we give an excess of any of these the result is injurious. Now we cannot give an excess of earth, we can prevent an excess of water, we cannot control excess of air, nor can we control an excess of sun. Can it then be water in excess? A faithful lover of nature who believes in God's goodness in all his works, in spite of whatever appearance, brought on this whole investigation by remarking that 'water never hurt anything' and this essay is in vindication of this remark. Nature, like a true lover, discloses to her beloved all her secrets.

It is not water in excess, inasmuch as this would show itself in marshy, swampy, undrained land, where the vine would not live, and does not exist in our vineyards. Neither is the rot caused by the deficiency, as in the only matter we can control, namely, water. A season deficient in water always produces a crop of grapes free from rot, a dry season making a rich wine but not a large quantity. Here let it be remarked that a dry summer is always a hot one. Again we come to a negative conclusion, and as the rot is neither caused by excess or deficiency, let us look elsewhere. It is not caused by insects or birds. It is not caused from within by disease of the plant in roots or