

THE GLEANER.

AND NORTHUMBERLAND, KENT, GLOUCESTER, AND RESTIGOUCHE
COMMERCIAL AND AGRICULTURAL JOURNAL.

New Series, vol. 1:

Nec araneurum sane textus ideo melior, quia ex se fila gignunt, nec noster vilior quia ex alienis libamus ut apes.

No. 11.

Miramichi, Tuesday Morning, December 6, 1842.

THE GLEANER.

Agricultural Journal.

From Jackson's Agriculture and Dairy Husbandry.

SOILS.

The soil, or that earthy substance with which the dry land is in most parts covered, forms more particularly the material on which the agriculturist has to operate. An investigation of its various qualities is absolutely necessary for all who would conduct farming business in an enlightened and liberal manner.

The soil is mainly composed of particles which have been disengaged by various means in the course of time from the rocks on which it rests. In some instances, and more particularly on hills, it is composed in the main of pulverized materials from the rocks immediately beneath; but in many others, the pulverized matter has been washed down from high into low grounds, or transported by floods from great distances. The action of air and water on rocks in dissolving them, and the power of the latter element in transporting the disengaged particles, are the chief causes of the present arrangements of the soil.

Notwithstanding the different appearances which the earthy covering of the globe exhibits, it is composed almost entirely of four substances formed by an original union of simple elementary matters. These four substances, washed at a former period from rocks, and called primitive earths, are *clay*, *sand*, *lime*, and *magnesia*. It is by the due combination of these that fertility ensues. We shall describe them separately.

Clay.—Clay, or, as it is often called, allumina, or argillaceous earth; is easily distinguishable. It is a compact substance, which absorbs water slowly, and when moistened throughout is soft, pliant, and exceedingly tough or tenacious. In its ordinary condition it is so close in texture as to prevent the penetration of the roots of plants, and therefore is a serious obstacle to vegetation. Clay is one of the most obdurate and worst kinds of soil upon which a farmer is called to operate. If it rest on a substratum of gravel, or friable rock, or sand, it admits of easy melioration; but this is seldom the case; it too frequently rests on a cold and still more compact dark clay, called *till*, which is so close that no water can sink through it.

A clayey soil may be meliorated by a due mixture of sand or any other light substance, which will serve to sheer down its particles and keep them apart from each other. All kinds of calcareous manures, ashes, and the loose dung swept from the streets of towns, peat, and farm-yard manure, are serviceable in mingling with clayey soils, and bringing them up to a proper state of fertility. When so improved, they are calculated to yield good crops of beans, wheat, oats, clover, and Swedish turnips. They likewise answer well for meadow lands or pasturage. Clay soils ought, if possible, to be ploughed up before winter sets in, in order to expose the furrows to the action of the frost, which mellows

and brays down the tenacious clods.

Sand.—Sand or gravel, called sometimes silex, silica, silicious matter, or earth of flints, is distinguished by properties of a totally opposite character from clay. It has little or no cohesion among its parts; is incapable of retaining moisture; and powerfully promotes putrefaction, but permits the gases to escape.—Sand is thus a corrector of alumina. These two earths may indeed be classed amongst the contending elements, of which a union heightens their common virtues, and rectifies and subdues their respective defects.

The bulk of the soil, generally, is composed of sand, to the extent of from four to seven eighths of the mass. Sir Humphry Davy observes that 'the term sandy should never be applied to any soil that does not contain at least seven eighths of sand; also, that sandy soils which effervesce with acids should be called by the name of calcareous sandy soil, to distinguish them from those that are silicious.'

We are informed by Sir John Sinclair that 'the best mode of improving the texture of a sandy soil, deficient in retentive or adhesive properties, is by a mixture of clay, marl, warp (the sediment of navigable rivers), sea ooze, sea-shells, peat, or vegetable earth. Even light sandy soils are thus rendered retentive of moisture or manure. In some parts of Norfolk the farmers have availed themselves of these auxiliaries for improving a sandy soil, in an eminent degree. They have thus entirely changed the nature of the soil; and by the continuation of judicious management, has given a degree of fame to the husbandry of that district, far surpassing that of others naturally more fertile.'

If the farmer of a sandy soil should possess the means of giving it a top dressing of brayed down or broken peat, he will find it to be attended with good effects; in general, the material of improvement are obtained with little difficulty. When properly prepared, a sandy soil is one of the most valuable which can be worked.—It will produce good crops of common turnips, potatoes, carrots, barley, rye, buck-wheat, peas, clover, and samfrin, and other grasses. It seldom possesses sufficient strength for wheat, beans, or flax.

Crops on sandy soils are easily injured by drought, as the moisture too readily evaporates from the open particles. This may be in some measure remedied by deep ploughing, which has the effect of preserving a due degree of moisture in the substratum as a reservoir for the plants. To assist further in preserving the moisture in the soil, any small stones which lie on the surface should not be picked off. In rainy climates, or when the soil rests on retentive clay, such expedients may not be necessary.

Gravelly soils are similar in character to those which are sandy, and equally require the administration of materials to give tenacity to the mass, also a due supply of compost manure. Both sandy and gravelly soils should have frequent returns of grass crops.

Lime.—Lime, commonly called calcareous earth, is never found naturally in a pure state, but in combination

with the acids—chiefly with the carbonic, for which it has so strong an affinity that it attracts it from the air. The burning of limestone is undertaken for no other purpose than to expel by heat this gas, and reduce the base to a caustic powder, in which state it has a strong tendency to absorb first moisture, and then the carbonic acid of which it had been deprived. Lime blends the qualities of clay and sand, occupying a middle place between the two. In its caustic state it is a powerful promoter of putrefaction, or decomposer of animal or vegetable matter, to which circumstance is owing, to a certain extent, its efficacy as a manure. Lime also helps to fix the carbonic acid which is generated by the fermentation of putrescent manures in the soil, or which floats in the air on the surface of the earth, and it freely imparts this gas, in union with water, for the nourishment of plants. Lime is therefore an extremely valuable ingredient to the farmer; and, accordingly, wherever agriculture is carried on with spirit, it is eagerly sought after, though it sometimes bears a very high price.

Magnesia.—Magnesia is a primitive earth found in some soils, but in a much smaller proportion than the above three. Its properties are nearly analogous to those of lime, but of doubtful value, and it is certainly injurious when mingled in large quantities with the other earths.

On analyzing the various soils and subsoils, they have been found to resolve themselves into one or more of the foregoing primitive earths; and their barrenness or fertility have in no small degree depended on the mixing and assorting of these ingredients. Some soils are called *loams*; a loam, however, is by no means a distinct body, but is a combination of clay, sand, or calcareous matter. Some loams are denominated clayey, from the excess of argillaceous matter; others open and light, from the preponderance of sand. In fact, these two original ingredients seem capable of being compounded in such an infinite variety of ways, as to give occasion to that diversified texture of soils met with in all countries and all situations.

Besides these four primitive earths, which constitute equally the soil and subsoil, the upper of these, or mould, contains the putrid relics of organized substances that have grown or decayed upon it, or have been conveyed thither in the progress of cultivation. The decomposition of these is the proximate cause of fertility; and the richness of soils bears reference to the relative quantities. The residual earth remaining after the process of dissolution, is extremely light in weight and always of a blackish colour. It is owing to this that a garden, which has been under long continued culture, approaches to a black shade, progressively deepening according to the abundance of this matter. In addition, nearly all soils are found to contain certain various chemical compounds, mineral salts, and metallic oxides; some of which are beneficial, others harmless, and a few injurious, to vegetation, and which either pre-existed in the strata from which the surface

has been formed, or have been carried to it by subterranean springs, or by factitious causes.

The nature of soils is sometimes indicated by the kind of vegetables which they appear spontaneously to produce. This, however, is not a safe test of the nature of soils, or rather of what can be produced from them in a state of tillage; for the seeds of weeds which grow upon uncultivated ground, may have floated to them from a distance and vegetated where they have chanced to fall. All that can usually be expected from this kind of investigation is whether the field be moist or dry, as for instance, rushes will invariably indicate superabundant moisture and a necessity for draining. The quantity of herbage or plants produced in a state of nature will also serve as a test of the soil and its capacity for production. A surface which exhibits thin scanty herbage is a sure indication of poverty of soil, or a defect of moisture in the climate. After a wet season a thin poor soil may afford luxuriant vegetation, and a clay soil the reverse; the previous state of the weather, therefore, must be taken into account in judging of soils and their spontaneous products.

Soils differ considerably in colour. There are dark or blackish, reddish, brown, and whitish soils, each colour being an indication of the soil or subsoil. The best soils are uniform in colour, not mottled. The reddish appearance in some soils is caused by a combination of iron or ferruginous matter, but this is not found to impair fertility. The depth of soil is of as much importance as either its quality or colour. With a shallow soil it is impossible to cultivate to advantage tap or tube-root vegetables, such as carrots, turnips, or potatoes, for these extend their roots to a considerable depth. There is likewise not a sufficiency of substance to retain moisture. Shallowness of soil may in some instances be remedied by the use of the subsoil plough, which loosens the retentive substratum, and prepares it for being turned up at a fitting season to increase the quantity of available soil.

Effect of Soap-suds on Cabbages.—I believe it will be a thankless piece of service for one gardener to teach another how to grow Cabbages and Cauliflowers; yet as these crops of vegetables have failed this season in various parts of the country, the following notice may perhaps be of use to your cottage readers. Wherever soap-suds have been used plentifully, cabbages and cauliflowers have grown luxuriantly. I have made several inquiries of others who have used them and in no instance have I heard of a failure where soap-suds have been applied. I intend to try them over Broccoli to see if they will prevent them clubbing. Others may do so likewise, and make known the results. Wherever the alkali in the water has prevented the enemy from destroying the roots, or given the roots more vigour to resist the attack, I do not know; but one thing is certain—where such matter has been applied, it has produced the most beneficial result. I think cottagers may take a lesson from this, and save that which would