sand. Loamy soil consists of pure clay and from 30 to 60 per cent. of sand. A sandy loam contains from 60 to 90 of sand. A sandy soil contains no more than 10 per cent. of pure clay.—In each of the soils above described the siliceous sand may be separated by mechanical washing. But the above classification has reference only to the clay and sands, while we are fully aware that lime is an important constituent of soils.—We have therefore marly soils, in which the proportion of lime does not exceed 20 per cent.—Calcareous soil contain upwards of 20 per cent. of Lime. These are also denominated calcarious clays, calcarious loams or calcarious sands according to the quantity of clay and sand which are present in them. Lastly, vegetable moulds, which are of various kinds, contain from five to ten per cent. of organic matter. The method of determining the amount of vegetable matter, sand, or clay, for the purposes of classification, is to dry well a portion of soil and weigh it, then heat it to dull redness; the loss in weighing it again is the quantity of organic matter—chiefly vegetable, with a little water. After being burned, take 100 grains, let it be put into half a pint of water, with half a wine glass full of spirits of salts, and frequently stirred. The loss by this treatment will be the per centage of lime. A fresh portion of the soil may now be taken and washed, to determine the quantity of silicious sand it contains. If the sand, after washing, be supposed to contain lime, it may be separated as previously stated, by applying spirits of salts.—Having hastily glanced at the classification of soils from their chemical constituents, I shall now proceed briefly to consider their general origin. Over the greater part of this peninsula, as in Canada generally, the rocks are covered by accumulations of loose materials, chiefly of sands, gravels, and clays. This covering varies from one to two hundred feet, and the fertility of the different parts of the province must necessarily depend upon which of those layers may chance to lay uppermost. When naked rocks are present it may be observed that the actions of rains and frosts, together with the atmosphere, causes their surfaces to shiver off, and crumble down or wear away. Hence at the base of cliffs, loose matter collects and gradually forms a soil. The accumulations, of which I have alluded to as covering the rocks to various depths, consist of materials thus washed down or otherwise transported by water, winds, or by other geological means. Thus, the general conclusion may be fairly drawn that the various soils have been produced by the gradual decay, or crumbling of pre-existing rocks. It is therefore evident that wherever a soil rests upon the rock from which it has been derived, we may rationally expect it to partake more or less of the composition of that rock. Beneath the soil and the drifted materials on which it rests, we invariably find the solid rocks consisting of layers or beds of different thickness, resting one upon another and always maintaining the same relative position. These layers are denominated *strata*, hence such formations are called stratified rocks. Beneath these aqueous formations lie what are called the unstratified or igneous rocks, from their having been more or less in a melted state. The stratified rocks are divided into the primary (the most ancient), the secondary, and the tertiary, which overlie both. Before proceeding to consider the peculiarities of the strata on which, and from which, the soil of this county, as well as that of the Western Province, rests, it may not prove uninteresting to enumerate briefly the various formations deposited in many parts of the Globe since the Silurian system was formed.

1. The *Tertiary Strata* which lies immediately below the drift is an extensive series of 2,000 feet deep, comprising vast accumulations of marine and fresh water deposits, as shells, sands, boulders, plants and remains of animals, both of extinct and existing species.

2. The *Second Strata*, the chalk or cretaceous group consists of a marine series of formations, including strata of limestone, sandstone, marls, and clays abounding in marine fossils, reaching to the depth of 1,000 feet.

3. The *Wealden Formation* is a peculiar fresh water deposit of 900 feet deep. It contains beds of sandstone, clays, and limestone, almost wholly composed of fresh water snail—shells and minute crustacea, and is particularly characterised by the remains of peculiar aquatic reptiles.

3. The *Oolite formation* is a marine deposit of two thousand feet in depth, consisting of limestone and clay, which abound in marine shells, corals, fish, reptiles, and animals of the kangaroo or pouched order.

4. The *Lias formation* is a series of limestones, clays, shells and marls, of 700 feet, which contain marine shells and the remains of two genera of reptiles, the Ichthyosaurus and Plesiosaurus. The term 'lias' is a contraction of 'layers.'

5. *Saliferous*, or *New Red Sandstone*, is a marine formation, consisting of marls and sand-sandstones of a red colour. It is divided into upper and lower; latter contains red and white marls, also magnesian limestone. It is named 'Saliferous,' because it contains saline materials; thickness, 1700 feet.

6. *The Coal System* consists of shells, clays, ironstone, and limestones interspersed, with beds of coal to the depth of 5,700 feet.

7. *The old Red Sandstone* is a marine formation, containing red and green marls, limestones, sandstones, shells, corals; also, flagstones and shales. The colour is of a dull red—whence the name. It is 10,000 feet thick.

8. The *Silurian System*, upon which the soil of Western Canada rests, is a marine formation, consisting of limestones, shales, sandstones, slates, and flagstones, abounding in corals, shells of various kinds, with enchrinites and trilobites. It extends to the depth of 7470 feet. Such is a general description of the nature and descending order of the stratified rocks as they occur in Great Britian; but as these different formations have been deposited by the degradation of pre-existing rocks, it only remains for me to call your attention to the composition of the Granites, from which originally all soils were derived. The name Granite is given to rocks constituted of a mixture of three simple minerals—Quartz, Mica and Felspar, or Horneblend. QUARTZ is silica and Oxygen; FELSPAR is composed of aluminae