

Q. What do you mean by a partly decomposed state?

A. Partly rotted or decayed.

Q. Why is an unreclaimed peat soil so unproductive?

A. Because the substances of which it is formed, while they are in a partly decomposed state, are not able to nourish the better order of plants.

Q. How does this arise?

A. The great quantity of water which all bogs contain, prevents the process of decomposition from being completed.

Q. Does this entirely depend upon the presence of water?

A. Chiefly so; for the water prevents the air, which is necessary to rot or decompose any thing, from having its effect; and bog water contains an acid called *tannic*, which preserves vegetables from decaying. For instance, there are found in bogs sound pieces of trees, unruined metals, and even the bodies of animals in a perfect state, which is owing to the effects of tannic and other acids and the want of air.

Q. What is an alluvial soil?

A. An alluvial soil is that of which the banks of rivers are mostly composed: it is brought by the sea, and deposited, or lodged, by rivers in their course, and by floods. It is the richest of all soils, when deep and dry, and owes much of its goodness to its having been thoroughly mixed by the action of water.

Q. What is the subsoil or undersoil?

A. The soil which is under that which we till.

Q. Is the subsoil everywhere the same?

A. No; there are varieties of subsoils. Some subsoils are of such stiff, hard, and close clay, that they will not let water pass through them; and others are gravelly or sandy: sometimes the undersoil is a rock.

Q. Does the quality of the subsoil affect that of the upper soil in any way?

A. Yes; the fertility of the upper soil depends in a great measure on the nature of the undersoil.

Q. Mention some instances?

A. A subsoil of limestone gravel makes the upper soil of greater value, because water does not rest upon it, and the gravel underneath can be mixed with the surface soil at will. Besides, the roots of plants can strike down into such subsoil, in which they will find moisture and food. A subsoil of hard clay is the worst, because water rests there as it would on an earthen plate. When the undersoil is rock, the upper is generally poor, dry, hungry, and easily exhausted.

Q. What is the use of the soil?

A. To give food and fixity to plants.

Q. What is a plant?

A. A thing that grows in the ground, and has roots, stems, and leaves, possessing life, and living by nourishment.

Q. What is the use of the roots?

A. To give the plant a firm hold in the earth, and to take up moisture, gases, and very small particles of earth, which they distribute through the body of the plant.

Q. What is the use of the stem?

A. To support the different parts of the plant. It is through the stem also, by means of a great number of tubes in it, that the sap (that is, the liquid food which the roots have taken up) is conducted to all parts of the plant, the branches, leaves, &c.

Q. What is the uses of the leaves?

A. The leaves are to a plant what lungs and stomach are to animals; that is to say, they take in and give out air, they breathe as animals do, and they digest the food taken up by the roots.

Q. How is it, then, that the leaves of so many plants die in winter?

A. Because the plant is then in a motionless state, resembling death. The sap ceases to rise, and the appointed office of the leaves is at an end; but when the sap recommences to rise in the spring, leaves appear again to perform their wonted duty.

THE HOME-FARM OF MR. THORNHILL, OF STANTON, NEAR BAKEWELL.

On this farm great improvements have been effected, and, as they illustrate the advantage of such improvements, and show by contrast how much may yet be done by well-directed enterprise to increase the produce of our fields and the employment of our laborers, we shall describe them somewhat in detail. The farm extends to 400 acres, 200 of which are grass and 200 arable. Mr. Thornhill took it into his own hands in 1840. The farm then kept 16 cows, producing 2½ cwt. each. There were about six young cattle sold off the farm annually, and 50 to 60 sheep. Four farm horses were employed in working it, and, besides an annual produce of 60 quarters of oats, there might be once in three years or so a field of five or six acres of the best land in wheat, which, after a clean summer fallow, yielded 27 bushels an acre. Such was the whole produce of the farm in stock and corn. It now maintains a regular stock of 43 milch cows, 30 of the produce of which are sold fat every year at three-years-old. Each cow, besides rearing the calves, produces equal to 4 cwt. of new milk cheese. 200 sheep, old and young, are now kept on the farm, and £150 worth of pigs were last year sold off it. The average yield of wheat is now 40 bushels an acre, and of oats 60 bushels.

The land lies on the gritstone, and is all on a considerable slope, the lowest part being 220 feet above sea level, from which it rises over the top of the hill to an elevation of 900 feet. It is well sheltered by plantations and good stone walls, and the fields have been laid out in convenient enclosures. The soil is dry and friable, and the field operations can be conducted without impediment. To render it so a very large