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EFFECTS OF FALLOWING.

A great deal too little attention has been hitherto paid by practical cultivators to the influence of the sun's light. In our preliminary facts we have see that it is the principal agent in the digestion of the food of plants; and I have now to show that it seems to me to be the principal agent in benefiting land during the process of fallowing. In bleaching linen it is well known that no artificial process will produce the same effects as exposure of the moistened goods to the summer sun; and in the case of coloured prints the sun will frequently discharge the colours without any other apparent agency. At Shanes Castle near Antrim, I observed several years ago, that some chintz furniture in a room exposed both to the direct light of the sun, and to reflected light from Loch Neagh was rendered nearly white, though parts of the same furniture not thus exposed had the colours as bright as they probably ever had been. It is also known to chemists that by exposing moistened horn silver (white *chloride* formerly *muriate* of silver) to the sun's light it becomes blackish in two or three minutes while it takes a long time to produce the same effect in the daylight, out of the direct rays of the sun. Numerous similar instances of the chemical effects of the sun's light might be adduced from which it is fairly to be inferred that it acts by decomposing or otherwise changing the nature of the substances it acts upon.

As the sun-light then acts upon the dark-coloured and vegetable substances diffused through unbleached linen, and causes it to disappear from the goods in the same way it acts on the *dark* excrementitious matter (*Quarterly Journal of Agriculture*, iv. 664) turned up to the surface in the process of summer fallowing, decomposes it, and renders the soil lighter in colour and more wholesome in quality for the succeeding crop. This effect of the sun upon the colour of a dug up soil, may have been remarked by almost every reader, though the inference probably has now been made for the first time, that this paling of the colour of the soil is in fact caused by the light decomposing the dark excrementitious matter thrown into the soil by previous crops, which could not otherwise, than by fallowing, be easily got rid of, as no other decomposing agent could be brought to bear so extensively on a ploughed surface, as the sun's light.

The agency of the air appears next to light to be the most important in clearing the soil of excrementitious matter; for, even when decomposed, this matter might remain and prove injurious, were it not raised into the air by evaporation, and carried away by the wind. Professor Daniell tells us, that the same surface which, in a calm state of the air, would give off 100 pints of moisture, would yield 125 in a moderate breeze, and 150 in a high wind ; but what is of more importance to be remarked here with regard to fallowing, is that, according to the experiments of Curwen, there is only a very small evaporation from an unploughed or under surface, while from an acre well ploughed and harrowed, no less than 950 pints of moisture (containing of course, a portion of excrementitious matter) were carried off into the air in the space of one hour.

Indeed it does not appear that it is in all cases requisite for the excrementitious matter to be decomposed by the sun's light, inasmuch as the watery portions thereof may be evaporated without being separated into the gases that compose them; but decomposition will be indispensible before the solid portions of the excrementitious matter can be cleared away from the soil.

In the latter case, namely, were solid excrementitious matter must be decomposed in order that it may be expelled, water or moisture will be indispensible in the process, for as the grass-bleacher must keep his linen wetted or moist, to insure the full effects of the sun's light in whitening his cloth so must the fallowing farmer have his ploughed land somewhat moist, to insure the full effects of the sun's light in rendering the soil paler by decomposing the dark excrementitious matter.

Some may here object that a dark colour is one of the best marks of a rich loamy soil; but the dark colour of a soil loaded with excrementitious matter, is as totally distinct from the dark colour of a rich loam, as a black barren peat bog is from the colour of leaf-mould. The barren peat, indeed, is much of the nature of the excrementitious matter, and those gardeners who know not how to distinguish this barren peat from the sort of fertile peat soil, which is in some respects like leaf-mould, will be certain to injure, instead of benefitting, the American or other plants for which they may use it.

SOIL ADAPTED OR NOR ADAPTED FOR FALLOWING.—From these principles, then, the effects of fallowing may be plainly and unequivocally deduced, and it may thence likewise be inferred what sorts of lands will be most benefited by the process. "It is now admitted," says Sir John Sinclair, "that on all light soils, where the turnip culture can be practised, fallows are unnecessary; and that on strong lands, under a judicious system, they are not essentially necessary more than once in the course of a rotation." "However necessary," says Cleghorn, "the periodical recurrence of fallows may be on retentive clays, its warmest advocates do not recommend it on turnip soils, or on any friable loams incumbent on a porous subsoil; nor is it in any case necessary every third year, according to the practice of some districts. On the best cultivated lands it seldom returns oftener than once in six or eight years."

This doctrine agrees with the Agricultural Report of Mid-Lothian, where it is said, that on light dry soils it is seldom found necessary to fallow; but heavy or wet lands are not so pliable under green crops, and although it is possible to labour them also without fallowing, yet it is found to be more profitable to have recourse from time to time to this process, and its operation is generally more effective and lasting on such soils, so that it is seldom necessary to be repeated more than once in seven years. In the Reporte of Staffordshire and Kent, we are told that fallowing for wheat on cold, wet, or strong lands, and all such as are unfit for tunips, is absolutely necessary; and whoever may attempt to manage such lands, without fallowing, will have occasion to repent his mistake. In mixed soils, indeed, it is added, too moist for turnips, summer fallowing becomes absolutely necessary, and every attempt to crop without it for any length of time on such land, has terminated in the injury of the land, and the loss of the farmer.

According to the Rev. Mr. Headrick, in the communications to the board of Agriculture, strong clays require a more frequent repetition of fallow than those soils that are dry and friable, from containing a greater proportion of sand. In those districts where excessive rains abound during summer, it is seldom convenient for the farmer to be incumbered with too great a portion of fallow, as it is often impossible to get it properly wrought, before the land be turned into mire, if the finest parts of the soil be not washed away.

Among practical men, therefore, it appears, that there are scarcely two opinions about the sorts of soil requiring to be fallowed, and it will be found to agree precisely with the explanation of the effects of the process, that in light friable soils the excrementitious matter will readily escape by evaporation, or where the under soil is porous, may be carried down into it by the descending moisture; while, in stiff and heavy soils, the excrementitious matter is lodged and imprisoned in every clod turned up by the plough, and will require to be broken by the roller and the harrow, to set it free and expose it to the sun's light, and the process of evaporation.

From this it will also be obvious, that it is summer fallowing which is the efficient process—not winter following when the sun's light has little power, when evaporation goes on but slowly, and when the greater moisture over the soil holds the clods more tenaciously together, and consequently prevents the escape of the excrementitious matter with which they are charged.

I trust that these principles have now been put with sufficient clearness, not to require my following them out into more minute detail, a thing which every practical man may readily do for himself, when once he understands the facts upon which the explanations I have here attempted must rest. It may be well, however, to see in what manner my principles will affect the theoretical, and in many cases principal explanations hitherto given of the effects of fallowing.

A CURIOUS DISCOVERY.—A subterranean Indian village has been discovered in Nacochee Valley, in Georgia, by gold miners in excavating a canal, for the purpose of washing gold. The depth to which it is covered varies from seven to nine feet; some of the houses are imbedded in a stratum of rice auriferous gravel. They are thirty-four in number, built of logs, from six to ten inches in diameter, and from ten to twelve feet in length. The walls are from three to five feet in height, forming a continuous line or street, of three hundred feet. The logs are hewed and notched, as at the present day. The land beneath which they were found, was found covered, at its first settlement by the whites, with a heavy growth of timber, denoting the great antiquity of those buildings, and a powerful cause which submerged them. Cane baskets and fragments of earthenware were found in the rooms. The account is contained in a letter from which the following further particulars are extracted :—"The houses are situated from fifty to a hundred yards from the principal channel of the creek; and as no further excavation has been made, it is more than probable that new and more interesting developements will be made, when the land is worked for gold. A great number of curious specimens of workmanship have been found in situations which preclude the possibility of their having been moved for more than a thousand years. During my mining operations last year, I found at one time, about one half of a crucible, of the capacity of nearly a gallon. It was ten feet below the surface, and immediately beneath a large oak tree, which measured five feet in diameter, and must have been four or five hundred years old. The deposit was diluvial, or what may be termed table land. The stratum of quartz gravel, in which the vessel was imbedded, is two feet in thickness, resting upon decomposed eblorite slate. It is not difficult to account for the deposit of those substances in alluvial soil, for the hills are generally very high and precipitous, and, from the immense quantity of rain which falls, the streams are swollen to a great height, sweeping every thing with them, and, frequently forming a deposit of several feet in thickness in a season; but some individual land is from ten to fifty feet above the present level of the streams. These deposits exhibit appearances of as great attrition as those recently formed. There was a vessel, or rather double mortar, found in Duke's Creek about five inches in diameter, and the excavation on each side was nearly an inch in depth, basin like, and perfectly polished. It was made of quartz, which had been semi-transparent, but had become stained with the iron which abounds in quantity in all the country. In the bottom of each basin was a small depression half an inch in depth, about the same in diameter. What its use could have been is difficult to conjecture.—Some suppose it was used for grinding paint &c., or in some of their games and plays.—The high finish and its exact dimensions induce me to believe it the production of a more civilized people than the present race of Inians.

At certain periods Cooke, the actor was as mad as any inmate of Bedlam or St Luke's. In one of his quarrels a common soldier declined fighting with him, because he (C) was rich and the persons present would be affronted favour him. "Look ye here, Sir," said Cooke, "all I possess in the world is here, £350 ;" and he thrust the notes into the fire and held the poker upon them till they were consumed. "Now, I am a beggar, will you fight me now?