

of humus, are generally fit for turnips—the culture of which is so scant in Ireland—which, by pressing their whole weight upon a large circumference of space, do not require the firm hold in the ground for its roots (which extend widely) that is necessary for a heavy stalk of corn, which strains the cordage of its roots at every breath of wind; and, therefore, demands more cohesive ground.

Clay loams, of moderate cohesiveness, are the most valuable, for they do not too readily part with moisture, which is necessary to vegetation, nor retain it obstinately. Humus, when once introduced, remains longer in them, and heat is more moderately and uniformly imparted to such soils, than to those in which sand or gravel prevail to excess.

Two very eminent agriculturists* described the soil of Ireland many years ago thus:—Throughout Roscommon, some parts of Galway, Clare, and Meath in particular, is the richest loam ever turned up with a plough. In the counties of Limerick, Tipperary, and Longford, there is another kind of rich land, consisting of a dark, friable, dry, sandy loam, which, if kept clean, would produce corn for many years in succession. Parts of the county of Cork are uncommonly fertile (so also are some parts of the adjoining county of Waterford); “and, upon the whole, Ireland may be considered as affording land of excellent quality.”

One of those accurate observers concluded his report in these words—“You must examine into the soil before you can believe that a country which has so boggary an appearance can be so rich and fertile.

There are some soils so full of the elements of fertility, like that of the golden vale of Limerick, that manures are almost needless for them. The humus is so evenly diffused through a deep bed of soil that nothing more is required than to turn up fresh portions of it, sow grain, and leave the rest to the dews of heaven and the other influences of the atmosphere. But we must often be content with three inches of vegetable mould, and always thankful for six or seven inches of it.

No care can so alter the texture of a soil as to render it of the high quality first described, but it is always in the farmers' power to bring up the subsoil and mix it with the soil, if it requires it; and no farmer would be suspected by any one acquainted in any degree with the nature of land and crops, of leaving untouched an under-soil of lime, when his upper soil demands it; yet I have good authority for saying, that a man may be so lazy or stupid as to disregard this treasure under his very feet.

Professor Kane, describing the soil of the great central plain of Ireland, as a deposit upon limestone “formed by the decomposition of the mountainous country,” mentions, that although that soil

may be actually mixed with limestone gravel, it is left barren for want of lime.

Many soils may be greatly improved by the simple labour of blinding the upper and lower soils together with the spade or plough. When a farmer understands the wants of his soil, and has the remedial means at hand, he deserves to be poor if he will not make use of them.

The depth of shallow soils can be increased by raising portions of the under-soil; and clay soils can be meliorated by intermixture with the subsoil if it be of an opposite quality, and above all, by thorough draining, which, besides the other obvious advantages it occasions, renders them warmer.

Wet soils are always cold, and therefore unfriendly to vegetation; they cannot be heated, as Professor Kane has shown, because the warmth will be absorbed in producing evaporation of water from the surface, “as one may verify by holding a wet hand in the air, even before the sun, an impression of greater cold will be produced.” It is wasteful to apply manures to undrained wet land.

You may often see on clay soil, which does not permit the rain to filter through it, silicious or calcareous sands, “the spoils of the field,” (as they have been truly termed),* at the bottom of the main furrows, “yet it is but the message to the eye of the farmer to tell him by what he can see, how much has gone, whose loss he cannot see. Sand is visible, but ammonia† is invisible. It is but the body that remains when the spirit is departed.”

Drain perseveringly, and then instead of those vile weeds whose nature requires a wet soil, and which will hold possession of it too, in spite of you, unless you do drain, and that properly, you will have crops of different kinds that will greatly over-pay your expenditure of labour or money. After complete draining, loosen the soil thoroughly, to admit the free circulation of air and heat, and facilitate the intermixture of manures with the particles of the soil.

Next week we shall touch on manures; till then believe me, my young friends, yours faithfully,

MARTIN DOYLE.

* See Agricultural Gazette, April 11, 1846.

† An important element of nourishment to plants, which will be noticed in its proper place.

ON THE CULTIVATION OF THE RED CLOVER, AND THE CAUSES OF ITS FAILURE.

By ROBERT M'URK, Esq. of Hastings Hall, Dumfries-shire.

[Premium, Medium Gold Medal.]

It is a fact well authenticated in the practice of Agriculture, that when the same variety of crop has been cultivated on the same field for a number of years consecutively, or even at short intervals, the land ceases to yield the same weight as in the first years of cultivation; and it is upon a knowledge of this fact that a systematic alteration of crops is regarded

as essential to every system of good Husbandry.

When this important principle is neglected, deterioration in the soil invariably ensues, and then its previous fertility can only be restored by a greater expenditure of manure, and a stricter adherence to a well-arranged rotation for the future.

With regard to the cause and nature of the deterioration, much difference of opinion has, and does, even at the present time prevail; and men of the highest scientific attainments, who have devoted a portion of their time to its consideration, are nearly equally divided in opinion. The purely practical man readily assents to the truth of deterioration, by adopting such a rotation of crops, and system of cultivation, as he judges most likely, not only to prevent further deterioration, but to maintain the soil of his farm in a state of progressive improvement. Still, he is at a loss to assign a reason, in every respect satisfactory even to himself, as to the necessity for any particular succession of crops.

The red clover may, with propriety, be selected as the crop in which this deterioration has, for many years back, been more apparent than in any other. The observation however, is not confined to this crop, but is applicable to every other in general cultivation.

The question, then, as to the inducing cause of the deterioration in the soil assumes an aspect of more general importance than the deficiency of the clover crop alone; and its discussion can scarcely fail to throw some light on a subject which seems to be involved in mystery, perhaps the more from the speculative views entertained on it by men whose opinions on other subjects are entitled to the utmost respect. Before proceeding to adduce the results of our own experience it may not be out of place to state briefly, shortly but generally, the theories which have been advanced by two parties, who both think they see, in the views they entertain, a satisfactory explanation of a difficulty so intimately connected with the fruitfulness of the soil.

First, then, one party maintains that the necessity for an alteration of crops is owing to a function exercised by plants, by means of which they excrete or discharge from their roots such substances as they do not require, or cannot assimilate, and that the substances so excreted, deteriorate or unfit the soil, for a time, for the healthy growth of plants of the same variety; but although unfitted for the growth of plants of the same variety, others of a different kind will in these excretions, find the means of nourishment; and when appropriated by them, the soil will again be restored to its original fertility. Hence, the evident necessity for a rotation of crops.

Another cause for the diminished fertility of the soil is assigned, and, we think, more justly, by the other party that after repeated cultivation of the same variety

* The Rev. Arthur Young and Mr. Wakefield.