

cultivated in Maryland, happen to consist of plants whose roots penetrate very little beneath the surface of the ground. Clover has long tap roots, penetrating beyond the depth reached by the plow, even into the sub-soil, by which means it is enabled to appropriate matter altogether inaccessible to grasses, grain and tobacco. Under our old system of agriculture, including frequent working of the soil, large portions of the mineral constituents of plants were rendered soluble, and in part carried by rains into the sub-soil.

The deeper plowing of later times has brought much of these within the reach of our grain and other crops, but clover is an important agent in effecting this purpose, because its roots go much deeper than the plow. In addition to the mineral food which clover thus brings to and near the surface, it supplies in its decay a large amount of humus, which, as has been already stated, is required for the production of heavy yields of grain, tobacco and other money crops.

The introduction of gypsum soon succeeded that of clover, and was found very efficient in promoting its growth. It was next supposed that with the aid of clover and plaster, no other means need thenceforth be resorted to for sustaining the permanent fertility of the soil. But it was found afterwards that if clover be too frequently repeated in the same soil it did not flourish so well at first, and the term *clover sick* was applied to such soils; although it was difficult to imagine how a soil can get sick.

The truth is that a too frequent production of clover must tend to exhaust the soil within reach of its roots, of such of its mineral matters as are in a condition to be available for the use of the plant. Upon the decay of the clover its remains are used up by subsequent crops and are in part removed, so that the reduced amount of clover, as well as of other crops, is owing to a deficient supply in the soil of matters essential to their growth.

This state of things may be remedied in part, at least, by supplying the mineral deficiencies, but the most effectual and economical method is to alter the rotation, if it can be done consistently with the present profitable working of the land.

In England the introduction of turnips into the rotations upon light soils has had a most beneficial effect, for besides the profit in feeding these roots, much more grain is now raised on the same farm than before the introduction of turnips as a field crop. Our climate is not adapted to this plant, and although there are roots, such as parsnips, and carrots, &c., that we can raise without difficulty, yet they are not likely to make part of our field crops, unless the raising and fattening of stock should be engrafted upon our system.

Experience has satisfied English farmers that one grain crop