

actually find, less variety in the soils of these "tide-water regions." They contain, in fact, all the materials removed from the older rocks well mixed together, which have not been dissolved and carried out to the ocean.

The difference in them is in part due to the greater or less force of the currents from which they were deposited. As a general rule, however, they contained every constituent of the older formations. The finely divided state of these materials is such as permit them to be readily prepared for the uses of plants. To this cause we attribute, in part, the original high degree of fertility which our ancestors found in the tide-water counties of Maryland.

The deposits of the local drifts of former days are frequently confounded with soils "*in place*," but the former may usually be distinguished by their containing water-worn pebbles. They are found in small isolated areas in most of the counties bordering on tide-water.

The existence of organic matters in soils has been already referred to, but their importance is such as to require further attention.

When Baron Liebig's writings gave a fresh impetus to agriculture, more than twenty years ago, public attention was strongly directed to the importance of acquiring a full knowledge of the constituents of plants. The Baron's teachings tended to produce the belief that the atmosphere would furnish all the organic matters required for plants, if a full supply of each of the essential mineral constituents exist in or be supplied to the soil.

Being at that time a farmer myself, I was much interested with this view of the subject, and lost no time in putting it to the test of experiments. I prepared a mixture of mineral matters more than equal to that contained in a crop of corn, a crop of wheat and two crops of clover, according to the best analyses we had at that time. They were applied to several varieties of soil, and the same was done by a friend living at some distance, whose soils differed in many respects from mine.

The spaces to which the materials were applied showed little perceptible increase of product.

In the meantime Lawes, Boussingault, and others tried numerous experiments with analogous results. A controversy between Liebig and Lawes sprang up, which continued during some years, and perhaps is not yet concluded. I have not seen the Baron's last work, but according to Dr. Stoeckhardt, Liebig has rather retracted from his original views upon this subject, but without admitting that he has done so.

The numerous practical experiments which have been made to aid in determining correctly a subject of such importance, have largely added to our knowledge, and have materially