toga counties, and west of Champlain, have proved that their soils, evidently the result of the decomposition of granite or felspathic rocks, require nothing but the liming and manuring spoken of by MORTON, to render them most fertile; and the high state of cultivation in some of the river counties is proof of what such soils are capable in the hands of skilful farmers. Soils of this class in all countries have been found very durable, a fact which LIEBIG explains from the abundance of potash contained in the felspar, and which is given out by decomposition. Soils from the gneiss rocks are usually of an inferior quality to the granitic ones, from the felspar being frequently in a less proportion, and consequently the clay and potash of that mineral being wanting. Where the gneiss contains abundance of felspar, the soil has no perceptible difference from the best granite ones, and when treated in the same manner will be equally productive. Some of the best root soils in the world are from this rock, for instance the celebrated carrot and parsnip soils of Guernsey and Alderney; where the latter root is produced in greater perfection than any where else.

The great transition formation of western New York furnishes examples of all the soils which such rocks can produce, from the coarsest pebbles to the most compact clay; soils in which comminuted limestone forms a large proportion, and that which is destitute of this element; soils varying from the lightest sands to the heaviest clays. On these the agriculturist finds soils adapted to every product, and capable of every modification and course of culture. There can be no question bnt that a natural difference exists in the soils of this formation, and the line is very distinctly marked in many respects by the water shed that separates the streams of the lakes from those of the Susquehannah and Ohio. It will be found that the soils on the northern or lake slope are much better adapted to the production of corn, wheat, clover, &c., than those on the southern one, or rather on that part watered by the streams that flow southwardly; and there can be no doubt that this difference is caused by the geological structure of the two sections. On the northern slope, in the course of thirty miles, no less than three distinct deposits of lime rock are found, two of them of great thickness, besides several minor deposits. Indeed, the whole mass, sandstones and shales, contain so much lime as to effervesce freely with acids. The first of these is the deposite which forms the falls of Niagara, in which the quarries of Lockport are found, which causes the falls of the Genesee at Rochester, and crosses in its course eastward the Oswego River at Fulton. The second deposite is the one which may be traced from Black Rock through the counties of Genesee, Livingston, Ontario, Seneca, Cayuga, Onondaga, Madison, &c. This mass is of great thickness, and has produced the greatest effects on the agricultural character of the soils in those counties. The Oriskany sandstone strata, which lies between this deposite and the gypseous ones is made of coarse sand cemented by lime, and when mixed with the marly or gypseous clays from the shales lower in the series, or to the north, gives an excellent soil, wherever its influence is felt, from Oneida to Ontario. The upper deposite of limestone is the one called the Tully limestone, and is of limited extent and thickness, compared with the others. This deposite extends from the vicinity of Cazenovia westward across the counties of Onondaga, Cayuga, and part of Tompkins and Seneca. The mass called by the State Geologists, Marcellus Shales, some seven or eight hundred feet in thickness, lies between the Tully limestone and the Onondaga or crinoidal limestones. From the Tully limestone deposite there is not another till the carboniferous deposits of Pennsylvania are reached, leaving a district of some forty miles in width destitute of this rock. The rock strata of this transition district of New York furnishes in the red shale that lies between the gypseous formation and the Rochester series of lime rock, and in which the lead of the Onondaga and Oneida lakes are mostly excavated, a curious instance of the manner in which a deposit will run out, allowing the strata above and below to come in contact, while at another they are widely separated. Thus this red shale deposit, which, from Oneida to Onondaga or Cayuga, is not less than three or four hundred feet in thickness, disappears to the west, and at the Genesee River and the Niagara, allows the gypseous shales to rest immediately upon the Lockport or Rochester limestones. The result is, that the beds of reddish clay, which are so common in the counties east of Ontario, and which have been produced from the decomposition of the red shale strata, are not known at the west, where the strata has disappeared.

No one who is acquainted with the character of the soil, and their agricultural capabilities, in these two sections of western New York, that is, the northern and southern, will hesitate to ascribe the difference to their different geological origin. The influence of the lime deposits on the lake slope is too obvious to be mistaken; and the consequence of its absence on the part watered by the streams flowing south is equally certain. The vegetation is in some respects dissimilar, and the agricultural products are to a considerable extent, distinct. In short, there are few districts in any country where the influence of geological strata on the soil and its agriculture is more marked, or can be studied to better advantage, than in western New York.—*Willis Gaylord.*

ON THE PROPER DEPTH TO SOW WHEAT, ETC.

IN order to elucidate the manner of the growing of wheat from the grain till it branches considerably, I have enclosed a delineation with its explanation, on which it is necessary to make some remarks, viz: If a grain of wheat is placed six inches beneath the surface, it will vegetate and throw out two leaves which are generally called seminal leaves, and corres, ponding roots, (see the delineation, A, cc, and *dd*), then a thread is thrown out, which, as soon as it reaches near enough to the surface so as to come in contact with atmospheric air, it there forms a knob or enlarged point, which is the part from whence a new set of branches and roots are thrown out, which, in the autumn, is about an inch and a half or two inches beneath the surface (as in the delineation marked D). After this period, the seminal leaves' root, and the thread, denominated caudex, dies and becomes useless to the plant; above which it has a