RESULTS OF SOME PHYSICAL AND CHEMICAL STUDIES ON SOIL COLLOIDS

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Several members of the Soils Section of the Michigan State College have done more or less work on soil colloids during the last decade (9). These studies were undertaken and have been continued because they, with many others, believe that colloids play various and important roles with respect to soil characteristics. It appears that the amount of colloids present in most soils is far greater than has been believed heretofore. Doubtless the incomplete dispersion of the colloids in the preparation of the soil samples for physical analysis accounted for these earlier views. Owing to the amount of colloids present and to their activities, it seems that they control, in the main, the chemical and physical reactions and properties of soils, such as base exchange, adsorption and retention of moisture, heat of wetting, evaporation of water, plasticity, and probably others (2, 8, 7).

It was formerly believed that the colloids existed in the soil as coatings around the other particles. In the light of recent knowledge (4) to the effect that the amount of colloids is much higher in soils than was previously considered to be the case, it appears that this is not always true. It is difficult to conceive of this condition existing in soils which carry, for example, 40% or more of colloids. It is probable, however, that the colloids exist as coatings around the larger particles in the B horizons of the strongly podsolized, sandy soils, and it is undoubtedly true that if it were not for the presence of these colloids in the B horizons the acreage of drouthy and unproductive land would be far more extensive. A few years ago the writer (6) brought out that the water-holding capacity of these horizons in certain of these types is much greater than that of either the leached horizons or the parent

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3Reference by number is to "Literature Cited," p. 296.