LABORATORY METHODS OF VALUE TO SOIL SURVEY.

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Any laboratory method that may be utilized to provide us with information relative to the fundamental properties of soils should be of value to the soil surveyor. We are forced to admit that many phases of our knowledge of soil science are in reality very meager, thus there is much to be accomplished.

The physico-chemical studies may afford us much information that would be of really great value to the soil surveyor. The water relationship, for example, is probably one of the most fundamental and far reaching that could be studied because of the tremendous importance of water in so many different ways. By means of the water relations of soils we may study such problems as the weathering of soils, the structural relationships and also the size of particles. I am referring here to the investigation of different forms of water; and in addition the heat of wetting of soils may be used to great advantage in connection with the soil survey. The determination of the hygroscopic coefficient and moisture equivalent of soils has in the past revealed valuable information and probably is yet to be used to advantage yet it seems that they are not sufficiently used.

We need to know more about the weathering of soils, that is the formation of various horizons, their composition relative to the different elements that go to make them up. Then, too, there is the question of soil coloration. There are several phases of this to be settled. Have we gone too far with it in our investigations of soils or have we considered it sufficiently? Again, we need to know more about the constitution of the soil, not merely the per cent of nitrogen, phosphorus, potassium and others but the combinations in which they go into solution, reactions that take place when various substances are added to them and others. The degree of acidity and basicity are important in the classification of soils.

In some of the northern states where the acreage of organic soils is high, we are forced to make advancements in our present methods of classification and not merely to show on the maps whether such deposits are deep or shallow. Such questions as the nature of the materials that go to make up the surface and subsurface soil and also the total mineral, lime content, moisture relationships, the adsorptive properties and others are important. Such is not only desirable from the agricultural viewpoint but also from the industrial standpoint.

Those who have worked in this field probably realize that there is much that can be done from the laboratory standpoint to aid in the classification of these soils.

When we consider these various aspects we are forced to conclude that the soil surveyor should have the viewpoint of the scientist and when he goes into an area to classify the soils therein he is really taking up a piece of research work that is worthy of his most serious consideration and study. He has much...