SOIL CONSERVATION FROM THE VIEWPOINT OF SOIL PHYSICS

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SOIL conservation in the United States is a colossal problem; so colossal that but a few of us can see the problem as a whole. It varies widely in different sections of the country. The analysis of the situation in any section will depend in part upon the background and training of the investigator. In this symposium the problem will be discussed in turn by specialists in three different fields, a physicist, a microbiologist, and a chemist. I can tell you now what you can expect. It will be another story of the three blind men and the elephant. It has fallen to my lot to grasp the elephant's tusk. It is hard, dry, intractible, impervious, deflocculated, poorly ventilated! Such tilth! Is it any wonder crop yields are unsatisfactory? My friend, Dr. Waksman, is standing by my side. Being a microbiologist he does not touch the elephant! But he happens to catch a whiff of his breath and exclaims, "Halitosis! We must change his internal flora!" Dr. DeTurk, being a fertility specialist, is at the other end of the elephant! He examines the accumulated evidence, shakes his head and remarks, "We must change his diet. He is not getting enough nitrogen."

I am inclined to feel that you will find some truth in the diagnosis of each of us. In nature our special fields are inseparably intertwined. A healthy type of biological activity requires the proper physical environment and is necessary for the creation of such an environment. At the same time micro-organisms are an essential part of the mechanism by which the reserve supply of the necessary chemical elements is converted into soluble forms. Our analyses will I hope form separate segments which will fit together to give a consistent picture of the problem as a whole.

I shall divide my discussion into four sections, viz., (1) the soils we had, (2) the soil we have, (3) the factors responsible for the change, and (4) what can we do to ensure good physical conditions in our arable soils?

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