

lime contained in it will then be precipitated as sulphate of Lime; to the other add an excess of Ammonia, Sal-Ammonia and Bin-Oxalate of Potash, filter from the precipitate, and add to the liquid Phosphate of Soda; the whole quantity of Magnesia will then be precipitated as Phosphate of Ammonia and Magnesia.

Both precipitates may be compared with each other as to their quantity; they both contain about one-third of the weight of their respective contents of Lime and Magnesia.

DETERMINATION OF SOLUBLE SILICIC ACID, AND ALKALIES.

The supply of Soluble Silicic Acid and Alkalies to soils, is due to the quantity of clay and humus they contain, as well as to such fragments of undecomposed rocks as contain Silicic Acid, Potash and Soda as constituents, and which will become liberated and dissolved in consequence of the degradation of these rocks. An investigation of the condition of soils concerning these matters makes a part of the examination of the mechanical texture of the soil; the question which remains here to be solved, is: what quantities of these substances exist in the soil in soluble form, ready to meet the wants of plants.

For this purpose we must go into a more elaborate examination of the soil as has been done before; the peculiarities in the chemical character of the alkalies which have been felt disturbing many practical branches of our science, also prevent us here from giving a readily practical method for their determination, for which we have still to hope the best from future.

The following method seems to be the shortest and is correct:

Take about 5 grammes (75 grains) of the soil under examination, and boil the mass for some time with dilute Hydrochloric acid, whilst constantly replacing the evaporating water; filter then from the remaining residue and evaporate the liquid in a platina dish to dryness. Moisten the dry mass with a few drops of concentrated Hydrochloric acid, and after some time add water to it. What remains insoluble is that part of Silicic acid which existed in the soil in its soluble modification; it must be filtered and weighed. To the solution add Oxalic acid, and then an excess of ammonia and phosphate of ammonia; filter from the formed precipitate, evaporate the filtrate to about one-half, and whilst yet hot, add to it first acetate of lead, and then carbonate of ammonia and ammonia. To the filtrate, add a little sal-ammoniac, evaporate and apply finally a gentle heat to expel the ammoniacal salts. The remaining consists of Chloride of Potassium and Chloride of Sodium, which have to be weighed and separated by Chloride of Platinum in the common way. Potash is among these substances indisputably the most valuable, and is always accompanied by Soluble Silicic Acid. To Soda we cannot attribute equally valuable nourishing properties, since it