

in composition. There is in fact a range of 20 per cent. for each of these groups. If, for example, a soil contains 10 per cent. of sand and the rest is clay, we should call it a clay soil. If, again, a soil contained 40 per cent. of sand and the remainder is clay, it would be a loam. This is a classification which will be sufficient for our purposes, and may conveniently replace the complicated systems which are supposed to be necessary when treating the subject more in detail.

21. In addition to this physical analysis of the soil we have to consider the several ingredients of which it is composed, and these are determined by **chemical analysis**. Chemistry reveals to us the fact that soils contain a large number of different substances, and that the proportion in which they exist is very variable. It is desirable that these substances should be familiar to the mind, and their general influences clearly understood. They are briefly referred to here without going into those fuller details which may be found in any textbook on chemistry.¹

22. The soil consists of **two** distinct classes of bodies, viz., those which are mineral or **inorganic** matters, and those which are **organic** substances. When a soil is exposed to the action of fire these two groups are separated, the organic matter is burnt off and dispersed in a gaseous form, but the inorganic matter remains.

23. The **Inorganic matter** found in soils may be briefly noticed here. **Silica** or silicic acid first claims our attention. This body forms a very large proportion of sandstone, and it exists abundantly in granite and other crystalline rocks. When combined with alkalis or with an alkaline earth, it forms silicates, a series of bodies of the utmost importance in

¹ Johnston's "Catechism of Agricultural Chemistry," by Voelcker, followed by Roscoe's "Lessons in Chemistry," may be named as presenting valuable elementary instruction.