

in different kinds of plants in very different proportions. One variety of plant is found to contain more of one material than another kind of plant, and the total quantity of ash also varies. Taking the entire range of cultivated crops, we find that, with one exception (24) all the inorganic substances named as present in the soil (26) are taken up by plants and built into their structures. It is also known that plants take up this inorganic or mineral matter with some regularity, selecting only that which they require, and refusing to use that which is not desirable for their growth.

31. That portion of the plant which is burnt off is known as the **organic** matter. In the plant it exists in a great variety of forms, but these have been grouped into two classes—those which contain **nitrogen** are called **nitrogenous** bodies, whilst those which do not contain nitrogen are called **non-nitrogenous** bodies. This is a distinction which must be carefully remembered, for these organic substances are not only distinguished by this difference in their composition, but the presence or absence of nitrogen also **determines the work they can perform**.

32. The following is a list of the principal substances which constitute

THE ORGANIC MATTER OF PLANTS.

Non-nitrogenous Bodies.

Starch.
Gum.
Sugar.
Cellulose and woody fibre.
Oil.

Nitrogenous Bodies.

Albumen.
Gluten (gluten).
Casein (legumin).

The **non-nitrogenous** bodies are all composed of the three elements—carbon, hydrogen, and oxygen. Because they contain carbon, they are often called carbonaceous, but it is more convenient to describe them as non-nitrogenous. The bodies named in the **nitrogenous** group contain carbon, hydrogen, and oxygen, but they also contain **nitrogen**, and hence