

the familiar substances, sugar, starch, fibre and a class of nitrogen-containing bodies known as albuminoids or proteids. Of these the gluten of wheat and other grains, forms a well known example.

The sugar, starch, fibre and other non-nitrogenous organic constituents are built up by the physiological functions of the plant from the carbonic acid, which exists to the extent of 4 volumes in 10,000 volumes of the atmosphere. This absorption and assimilation takes place by means of the plant's chlorophyll (or green colouring matter) in the presence of sunlight, oxygen by the same process being evolved. The carbon (the fundamental element in organic bodies) of the albuminoids is also derived from the same source. It will thus be seen that by far the greater part of the dry matter of all plants is derived directly from the atmosphere. It may be pointed out in passing that in this way the carbonic acid exhaled by animals is utilized, and thus the approximate constancy in the proportions of the atmospheric elements, maintained. The production and consumption of carbonic acid and oxygen thus effected, provides for the welfare of both plants and animals.

#### PLANT CONSTITUENTS.

The Organic elements	{ Carbon Oxygen Hydrogen Nitrogen }	{ Carbonic Acid Water }	{ Starch Sugar Fibre Oil }	{ Album- inoids }	Air derived elements
The Inorganic elements	{ Calcium Magnesium Potassium Sodium Iron Manganese }	{ Phosphorus Silicon Sulphur }	{ }	{ }	Soil derived elements.

Until recent years, it was believed that all plants absorbed their nitrogen from nitrogen-containing bodies (chiefly humus) in the soil, and from this source only. It has now, however, been definitely ascertained, as the result of many carefully conducted experiments in Germany and England, that certain plants have the power of utilizing the free nitrogen of the air, building it up within their tissues into complex organic substances, as the albuminoids. These plants are known as the Legumes, comprising the well known plants, pea, bean