John Lawes in the investigation at Rothamsted thus expressed himself on this wonderful peculiarity of the vegetable world:—"The immense variety of substances produced in the vegetable kingdom has always been a source of astonishment to the chemist. The plant is indeed the finest chemical laboratory with which we are acquainted. While some kinds of chemical work are common to all plants, there is hardly a species which does not possess some special capabilities, which does not produce some products different from its neighbors. When we survey the whole vegtable kingdom, the extent to which this specialisation is carried, and the immense variety of the products obtained become simply overwhelming. Chemists are still unacquainted with the larger part of the substances produced by plants. When we turn from the products of plant work to the materials employed our wonder still increases, for these materials are of the simplest kind—water, carbonic acid, oxygen, nitric acid and a few inorganic salts—yet out of these the whole of the immense variety of vegetable products is constructed."

In the interesting lecture by Mr. Shutt to which I have already referred, he traced the travels of oxygen and the manner in which that element carries carbon to the vegetable kingdom, and assists in storing it up in plants in the form of carbohydrates, such as starch and sugar and cellulose. These substances are, however, quite destitute of nitrogen, and we cannot say much about them now. We are tracing now the fortunes of nitrogen, and that element occupies itself in the plant in building up an entirely different set of compounds from the carbohydrates, namely, the albumenoids, or as Beilstein calls them the albuminates, or as Mulder christened them the proteids. In casting round for the word which indicates popularly those of them which occur in the vegetable world, I should be inclined to fix on the word gluten, but that substance is only a mixture of insoluble albumenoids, and it is doubtful as to whether it exists in the original grain.

No doubt this general name of albumenoids has been conferred upon all these bodies from the resemblance they bear in some of their properties and always in chemical composition to ovalbumen or white of egg. This substance is soluble in water in its natural state and coagulates on heating.