

“whatever may be their dimensions, into a limited number of elementary tissues, each having a structure peculiar to itself.”

Following up the proposed course of our subject, we proceed to commence with an abridged view

#### OF THE PRIMARY TISSUES OF PLANTS.

Among these, as the most predominant and important structure, Mr. Carpenter enters into the consideration of the history and structure of the cell formation in the vegetables, and shows in what essential particulars it differs from cells developed in animals. The cell-wall has been considered heretofore as a simple membrane, but it is now shown in many instances to consist of two layers of different composition and properties. We cannot do better than to present the latest ideas by an extract. “Although we have hitherto spoken of cell-wall as a simple membrane, yet it is now well known to be made up in most, if not in all instances, of two layers of very different composition and properties. The inner of these layers, which has received the name of *primordial utricle*, appears to be the one first formed, and most essential to the existence of the cell; it is extremely thin and delicate, so that it escapes attention, so long as it remains in contact with the external layer, and is only brought into view when circumstances occasion its separation from this; it seems to consist of an azotised compound, probably an albuminous nature; and it appears to participate actively in the vital operations of the cell. The external layer, on the other hand, though commonly regarded as the proper cell-wall, seems to be generated on the external surface of the primordial utricle after the latter has completely enclosed the cavity and its contents, so that it cannot be regarded as essential to the cell; it is usually thick and strong in comparison with the other, but it may possess various degrees of consolidation, from mere mucous to a firm tenacious substance; it is composed of cellulose, a substance nearly identical with starch; and it does not appear to take any active share in the vital operations of the cell, its principal office being to locate and insulate the matter it contains. This external layer may consist of many laminae, the result of successive deposits from the surface of the primordial utricle, but it still usually remains readily permeable to fluids, although no pores can be distinguished in it under the highest magnifying power.”

(To be Continued.)