cular impression round the stem. The age of the tree may accordingly be estimated by the number of these circles, or knots which appear along its stem. The successive knots which are seen in the stems of other endogenous plants, as may be observed in growing corn, and also in various grasses, may be traced to a similar origin.

The structure of exogenous trees is more complicated; for, when fully grown, they are composed of two principal parts, the *wood* and the *bark*. The woody portion exhibits a farther division into the *pith*, which occupies the centre, and consists of large vesicles, not cohering very closely, but forming a light and spongy texture, readily permeable to liquids and to air; the *harder wood*, which surrounds the pith in concentric rings, or layers; and the softer wood, or *alburnum*, which is also disposed in concentric layers on the outer side of the former. Each of these concentric layers of wood and of alburnum may be farther distinguished into an inner and an outer portion; the former being of less density than the latter, and consisting of a lighter cellular tissue: while the outer portion is composed of the denser woody fibres resulting from the union of numerous vessels with a cellular envelope. The bark is formed by concentric layers of cortical substance, of which the innermost are denominated the *Liber;* and the whole is surrounded by an outer zone of cellular tissue, termed the *cellular envelope*. The exterior surface of this envelope is called the *Epidermis*.

All these concentric zones may be readily distinguished in a horizontal section of the stem; which also presents a number of lines called *Medullary Rays*, radiating from the pith to the circumference. They are composed chiefly of large cells, extending transversely, or in the direction of the diameter of the tree, and composing by their union continuous vertical planes the whole length of the trunk.

Every vegetable stem, and also every branch which arises from it, is developed from a germ, or bud, which is originally of inconceivable minuteness, and totally imperceptible by any optical means of which we have the command. As