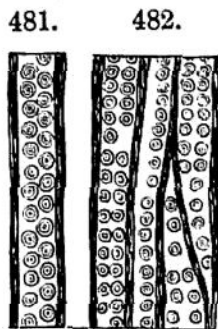


wood of the modern tree has a very large pith abounding in starch, surrounded by one or more rings of wood, each the result of several years' growth.

The ordinary "Evergreen" trees, as the Pine, Spruce, Arbor Vitæ, Yew, belong to the second and higher subdivision, the *Conifers*, so-called because the flowers and fruit ordinarily have the form of cones. In the Pine family the fruit is a cone; but not so in the Yews. The *Salisburia*, or Ginkgo, a tree with short and broad, somewhat fanlike leaves, is generally referred to the Yew family, though having some relations to the Cycads.

The woody fiber of the *Conifers* is marked with circular disks as in Figs. 481, 482; fossil woods of the order may thus be distinguished, and genera may often be distinguished by their arrangement.



481. 482.
Circular disks on the woody fibers of Conifers.

Another aberrant group, the *Gnetaceæ*, includes the genera, *Gnetum*, *Ephedra*, and *Welwitschia*; and the last, of which only one species exists, and that in Africa, approaches the Angiosperms, in its flower, "the staminal flower containing a rudimentary ovule." But it has the

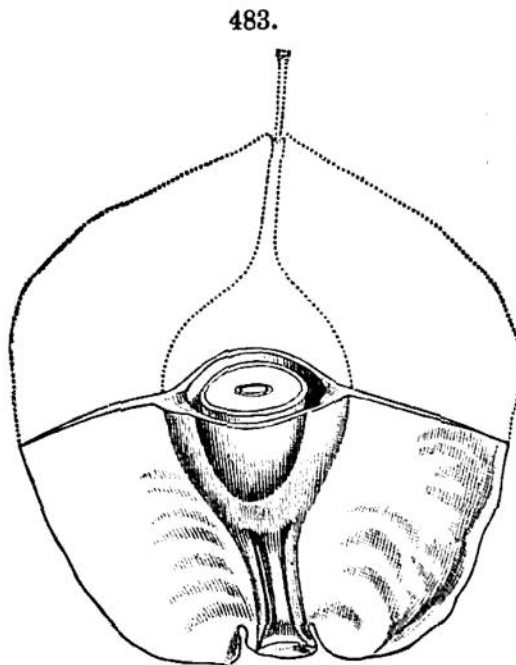


Fig. 483, *Welwitschia mirabilis*, showing transverse section of fruit, with the outline of the fruit finished in dotted lines.

broad strap-like leaves of the ancient *Cordaites*, and also, as the Fig. 483 shows, the winged form of fruit characteristic of the Carboniferous *Cardiocarpus*.

2. **Angiosperms.**—The higher Exogens, or the Angiosperms, have the seeds covered; the flowers perfect, the wood consisting largely of vascular tissue as well as woody fibers. Examples are the Maple, Elm, Apple, Chestnut, Rose.

2. Endogens.

The *Endogens* are represented by the Palm, Rattan, Smilax, Grasses, Orchids. A section of a woody stem, as that of a Rattan (a species of *Calamus*) or Smilax, shows the ends of woody fibers and ducts. The leaves are parallel-veined instead of net-veined, and not toothed, and the parts of the flower are commonly in threes.

CRYPTOGAMS, OR FLOWERLESS PLANTS.

1. The Higher Cryptogams, or Acrogens.

The *Acrogens* consist of cellular tissue with more or less of fibro-vascular tissue, and are capable of upward growth, whence the name from *ἀκρον*, *top*, and *γεννᾶω*, *grow*.

The lowest species have special interest in the geological history of plants. They are called *Rhizocarps* (root-fruited) from the position of the fruit at the base of the stem, or at the root. The figures represent, half the natural size, species of three of the very few forms now existing. They show the position of the nuts, and the unlikeness of the species in habit to most Cryptogams. Fig. 486, of *Salvinia natans*, represents a section of the plant showing only one of the pairs of leaves in the floating plant.