

If we examine a cross section of a ligneous plant with the microscope we find it composed of six distinct parts apparently formed of different substances, each no doubt designed by an allwise Author of nature for some particular purpose.

The first, and outermost of these is a thin coat generally of a greyish colour known among Botanists by the term cuticle or epidermis, and by some authors called the *false bark*.

Second, immediately within the former is the bark wherein is composed of a cellular substance, and of a different colour in different plants, but not commonly brownish. This in the language of Botanists is termed the *Liber*, the same word which in the Latin language signifies a book; this part being used for writing upon before the manufacturing of paper was discovered. Some writers have enumerated another substance as lying between these two, and given to it the name of the skin, but as others have not been able to discover any such substance, it is probable what they took for a separate coat was only a layer of the bark.

Third.—Below the bark and enveloping the wood we find what has been termed the alburnum or soft wood of a greenish colour, and which is annually converted into wood.

The fourth substance is what is termed the woody part, and which in most plants of the ligneous order forms the largest portion of the plant. It is moreover the most compact and solid part of them and employed more in every art of life than any other. In herbaceous plants the place of this substance is occupied by one of a fleshy nature called parenchyma.

Within the wood and surrounding the part to be next described we find a thin coat of a green colour and highly vascular texture. Botanists are not agreed as to what is the use of this part of the plant, but they have given it the name of the *Corona*.

Immediately within the foregoing, and forming the centre of the Plant we find the sixth substance of a distinct nature from any that has yet been described. This is termed the *Medulla* or pith of a soft spongy appearance, and extremely vascular texture. The Pith is sometimes found in herbaceous plants, but those termed aquatic from their growing in the water, appear to want it, and in the older ligneous plants it appears to be nearly obliterated by the wood.

On a close inspection, each of these separate parts appears to be composed of a cellular substance with four distinct kinds of vessels running through it. The existence of these vessels, or rather the fact of Plants being composed of a vascular substance, has been known for many ages. In many of them this is obvious to the naked eye; and in all it can be demonstrated by injecting these vessels, or by showing they are pervious to the air by an experiment with the air pump: but by the aid of the microscope, and the plant prepared in the following way Botanists have been enabled to discover that these vessels are of four different kinds, distinguished from each other by their structure, and the mode of arrangement in the plant.

If we immerse the root of a fresh growing plant in a decoction of Brazil wood; and let it remain for a few days at the expiry of that time, it will be found that the whole internal substance of the plant