This study on the stem of Bauhinia purpurea and Bauhinia variegata presents data on the structure and activity of vascular cambium in relation to age and season. Further, the formation and variation of cambial derivatives have been studied with the help of sections (TS, TLS and RLS) and macerated elements. The observations have revealed that the vascular cambium develops first in the fascicular regions and then in the interfascicular areas to form a complete ring in both the species. The cambial cylinder essentially consists of fusiform initials and ray cell initial and the latter are usually grouped to form ray units of diverse shape and size. The cambium is non-stratified in both the species. Fusiform initials are generally uninucleate but occasionally multinucleate too. After pseudotransverse divisions the newly formed daughter cells, which are generally unequal in size, grow intrusively to become as long as or even longer than the mother fusiform initial. New ray initial arises either from an apical cell cut at the end of fusiform initial or as a lateral cell cut off its side and occasionally by transverse segmentation of a whole or part of the fusiform initial.

The mean length of fusiform initials increases from the base up the stem. The overall increase in the length does not exceed some 40% and 28% of their minimum length in B. purpurea and
B. variegata respectively. Ray cell initials, in both the species, undergo greater multiplication to increase their number as the trunk grows older and wider. Relative proportion of fusiform and ray initials also varies with the axis girth. Fusiform initials constitute more in the middle of the stem of B. purpurea, while they are more in the young stem than in the main trunk in B. variegata.

The mean length of fusiform initials in the tree trunk varies with season. Fusiform initials tend to be relatively long in B. purpurea and small in B. variegata during acute winter. No systematic variation trend is, however, recognized for the length or width of fusiform initials in either species. Further, the tetraseriate cambium rays form a relatively small proportion, the multiseriates being merely negligible in proportion. Relative proportion of fusiform initials in Bauhinia spp. tends to be greater during May. The proportion does not show any consistent increase or decrease during the different months.

In the secondary phloem, sieve-tube members possess compound sieve plates on markedly oblique end walls in both the species. The phloem fibres are mostly aseptate in both the species. Both sieve-tube members and fibres experience intrusive growth, mostly monopolar in sieve-tube members and bipolar in fibres. The fibres grow about 5 times the length of fusiform initials in B. purpurea and 6 times in B. variegata.
Mean length of sieve-tube members in Bauhinia spp. increases gradually from the top of the tree downwards and later declines after reaching certain maximum in the trunk region. The average width of sieve-tube elements also increases from young to old stem axis in both the species. On the other hand, the average length of fibre cells experiences an initial decrease followed by a gradual rise in relation to the increasing girth of the stem in B. purpurea, while it shows a gradual increase with increasing stem girth, with a slight decline near the trunk in B. variegata.

It has been observed that the sieve-tube members are relatively small from July till November in B. purpurea and from July to March in B. variegata. The average length of phloem fibres tends to increase from August and maintains a high average till April, with an exception around January when it drops considerably in B. purpurea. In B. variegata the variation in the fibre length is not gradual. The fibres appear to be slightly longer during summer, more specifically from March to June. However, the relative proportion of the different phloem elements in either species does not show any systematic pattern of variation during a calendar year.

The mean width of the vessel segments in Bauhinia spp. changes irregularly with respect to season. There is no definite variation trend of the length or width of vessel segments. In B. purpurea, the vessel segments constitute about 10-39% of the
total conducting xylem in transection during the different months, the minimum occurring in June and the maximum in April. In *B. variegata*, the proportion varies from about 13–35%. The minimum amount occurs in January while the maximum in November.

The cambial cell swelling occurs around mid March in both the species studied. The cell division starts within a month or so. Emergence of new leaves precedes the cambial activity in both the species. The activity starts in late April when the average temperature is around 28°C. It appears that a moderately high temperature is inducive for cambial reactivation. Combined with high humidity, it promotes cell division in the cambial zone. Once initiated, the cambial activity is capable to continue even at relatively low temperatures. The differentiation of xylem and phloem continues simultaneously up to October. However, the phloem production stops in early October in the case of *B. purpurea*. On the whole, the cambium remains active for about 7.5 months in both species.