SUMMARY
The present study, “structural profiles of barks of some trees of economical values and their taxonomic applications” deals with microscopic analysis of various tissues and their organization in the trunk barks of 15 tree species which are either of timber values or medicinal uses.

The tree species selected for the studies belong to 15 species, 14 genera and 11 families (Vide table I).

Of the 15 species, *Aglaia elaeagnoidea, Diospyros ebenum, Garcinia gummi-gutta and Mallotus philippensis* are evergreen trees and other species are deciduous.

The surface features and cross sectional structural organizations of the bark were studied in detail.

Bark samples collected from different areas were processed for wax-embedded microtome sectioning through customary methods. Sections of 10-12µm use stained with 0.25% aqueous solution and dehydrated to prepare permanent slides.

The sections were photographed at different magnifications through bright field and polarized light microscope.

The surface features of the bark range from smooth, leuticellate, shallow fissured and deep fissured. *D. ebenum* and *N. cadamba* have deep fissures; *G.arborea* is lenticellate. Others are either smooth or minute and less prominent fissuring. The two species of commiphora have green smooth shining bark, exfoliating in thin flakes.

The outer bark (bark excluding the secondary phloem) is either single periderm or compound structure or rhytidome.

The single periderm is superficial is origin (eg. *A. elaeagnoidea, C.swietenia, C.caudata* and *D.latifolia*). Single deep seated periderma has been recorded in *C.gemmi-gutta and G.arborea*. In *C.berryi, A.excelsa* and *M.philippensis*, the periderm is single and superficial but often invaginate into inner portions and engulf small areas of cortical or secondary phloem (eg: *A. elaeagnoidea, M.philippensis*). In other species, the barks are *rhytidome* type.

The inner bark (the secondary phloem) is wider than the outer bark. It includes an outer wider zone of collapsed phloem and narrow inner zone of non collapsed phloem.
The collapsed phloem is characterized by wide dilated rays as in *A.excelsa, C.caudata, D.latifolia, G.gummi-gutta, M. philippensis* and *M.parvifolia*. A correlation between ray-dilation and fissuring of the bark was observed: barks with extensive ray dilations tend to have smooth surface; those with undilated rays have fissures on the surface.

The sclerenchyma elements the prominent component of the collapsed phloem exhibit the following variations. The sclerenchyma is totally absent in the barks of *comiphora* and in *G. gummi-gutta* sclerenchyma is scanty or absent. Scleroid type of sclerenchyma are found in diffuse masses in *D. ebenum* and *G.arborea*. Thick, coaxial cylinders of fibers are found in *A. elaeagnoida* and *D.latifolia*. Discrete, rectangular blocks of fibers occur in the remaining species.

As seen in TLS profile, the rays with other axial elements exhibit regular stored pattern as in *C.swietenia, D.latifolia* and *O.oojenensis*. In the barks of other species the phloem elements are nonstoried.

In some of the barks the rays have long uniseiate tails. (eg. *H.cordifolia, M.philippensis, M.parvifolia* and *N.cadamba*)

Calcium oxalate crystals are found to be quite unique and eye-catching disposition and offer in delible clues for identification of the barks. Of the different morphological categories such as prismatic druses, rosettes and needles, a unique and strange type of semicircular, fan shaped aggregations of crystals, mostly adhering to the cell walls were found in *C.swietenia*. Exclusively sand crystals are found *N.cadamba, T.Procera*, rosette types of crystals are arranged in regular coaxial cylinders in the collapsed phloem. In other barks either prismatic crystal alone or in combination with druses are found in various patterns of distribution.

Tannin through widespread in many barks, a characteristic type of tanniniferous idioblast is found in *Oogeinia oojenensis*. Large dilated parenchyma cells clustered in large masses possess dense accumulation of tannin.

Microscopic character- states studied in barks of 15 species are employed in the preparation of an artificial dichotomous taxonomic key.