V. SUMMARY

Morphohistogenic features of *Capsicum annuum* L. and *Solanum melongena* L. are described. The shoot apex, right from its embryonic stage to flowering stage is studied. The differentiation of cytohistological zonation in the shoot apex is investigated. The development of the axillary bud, both vegetative and floral, with special reference to the ontogeny of extra-axillary flower in brinjal has been studied. Developmental studies on leaf, stomata, primary vasculature, phloem, xylem, cambium and root apex have also been made. Pathological anatomy of virus affected brinjal and nematode affected roots of brinjal
is also described. In general, following are the important points of the present investigation.

1. The cytohistological zonation gradually differentiates histologically and cytologically in the embryonic shoot apex.

2. Cellular growth data in the shoot apex and studies on floral histogenesis show that the central region of the shoot apex is not inactive.

3. Presence of axillary bud in the sepal and internodal elongation between floral appendages in virus affected brinjal show that flower and vegetative shoot apices are comparable with each other.

4. The gamma irradiation damages the shoot apex. The formation of leaf in the central region of the irradiated apices suggests that the apical organization is morphologically and physiologically disturbed.

5. Morpho-histogenic studies show that the extra-axillary position of the flower in brinjal is not a result of adnation of the floral axis with the stem axis. But it is due to a
specialized type of internodal elongation.

6. In chilli, the leaf at the node where the dichasium is formed, does not belong to the node below as reported for *Datura* (in Rendle, 1952).

7. In leaf development of brinjal the derivatives of marginal initial occasionally divide periclinally. In addition to a predominant type of leaf development - middle type sub marginal growth - I came across the above mentioned variation in brinjal. Extension cells are found in the leaf blade.

8. The first formed internodes are shorter than the late formed ones. The basal part of an internode elongates less than the upper one in vegetative condition. In brinjal, the internode which bears the flower or inflorescence is longer than the vegetative internode. A part of the internode between the upper node and the flower is usually shorter than the part between the flower and the lower node.
9. The early differentiation of internode and cortex takes place when a leaf buttress is formed at the flank of the shoot apex.

10. Procambium cells transform into fusiform initials by more vacuolation, oblique divisions and apical intrusive growth. In brinjal fusiform initials are multinucleate.

11. Prolonged presence of the nucleus in the sieve elements of the elongating stem indicates that nucleate sieve elements may be functional and enucleate ones must be functional.

12. Perforation plate formation in the vessel elements takes place by thickening of the end wall (especially middle-lamella appears sharp) followed by its dissolution.

13. Quiescent centre is not found in the embryonic root apices of brinjal and chilli.

14. Nematodes damage cortical and vascular tissues in the root by either enlargement or rupture of the cells.