INTRODUCTION
Asteraceae Dum. at present is one of the most successful plant families in the world and comprises of about 1,400 genera and 25,000 species (Turner, 1977). The family is largely temperate, rare in tropics with the members occurring in almost every conceivable situation (Burtt, 1961). In the Indian sub-continent it is represented by nearly 120 genera and more than 600 species (Hooker, 1894). The majority of asteraceous taxa are herbaceous and only about two per cent of the total taxa occur as shrubs and trees (Willis, 1973). Although so large a family, the members are morphologically distinct in possessing head inflorescence; ray-or disc-florets; pappus; syngenesious stamens; inferior ovary with a single basal ovule and fruit-an achene.

Economically a majority of the Asteraceae are highly valuable as ornamentals while a few like *Carthamus tinctorius*, *Helianthus annuus* and *Guizotia abyssinica* are noted for their valuable oil and 'Chicory' which is blended with coffee, is obtained from the roots of *Cichorium intybus*.

The Composites are of great interest to embryologists because of great diversity in the development and organisation of the female gametophyte, presence of synergid
and antipodal haustoria, phenomenon of apomixis and peculiar
behaviour of antipodal cells (Davis, 1966; Maheswari Devi &
Padma, 1985a; Pullaiah, 1984). Although a majority of the
species follow the Polygonum type of embryo sac development
but as many as six other types, viz., 'Allium', 'Endymion',
'Adoxa', 'Drusa', 'Fritillaria' and 'Peperomia' are also
known besides some unclassified types in Balsamita vulgaris
and Chrysanthemum cinerariaefolium (Borgon, 1972; Fagerlind,
1939; Harling, 1960; Maheswari Devi & Pullaiah, 1978;
Martinoli, 1939). Despite the distribution of its members
over greater part of the earth, it is surprising that
only 15 per cent of the taxa have been investigated
embryologically (Pullaiah, 1984) of which some of the
accounts do not contain definite information about the first
division of the primary endosperm nucleus as to whether it
is accompanied by wall formation or not. Further, the
family has received very little attention with regard to the
developmental and structural anatomy of the seed-coat and
fruit wall though the seed-coat character of a family is of
taxonomic value (Netolitzky, 1926; Corner, 1976; Pandey et
al., 1978). A perusal of the data on the seed and fruit
anatomy also reveals inconsistencies regarding the presence
or absence of seed-coat, endosperm and endothelium in the
mature achene (Corner, 1976; Deshpande, 1961; Kapil & Sethi,
1962a,b; Maheshwari & Roy, 1952; Singh & Pandey, 1984; Tiagi
& Taimni, 1960).
Taxonomically the tribe Helenieae is an unnatural or polyphyletic assemblage with a disputable position (Cronquist, 1955). According to Turner & Powell (1977), ".....the tribe Helenieae should be dismembered and the constituent genera be realigned with those groups with which they might seem best related.....". In view of its disputable position, tribe Helenieae needs greater attention.

Histochemistry is an important biological tool. Its subject matter involves the identification of metabolites in tissues using stains or similar labels that bind the substrate specifically upon contact (Vijayaraghavan & Shukla, 1990). These studies help in understanding the complex behaviour of several biological compounds during progressive stages of seed development and maturation. In comparison to animal tissues (Lison, 1939) the botanical histochemistry is a young science and started only after the valuable work of Jensen (1962). Although a great deal of information is available on the embryology of Angiosperms (Maheshwari, 1950; Davis, 1966), very little is known about the histochemical happenings in the tissues of reproductive structures, specially during their ontogenetic differentiation. Most of the previous histochemical investigations specifically deal with a particular stage or
behaviour of a particular organelle or a particular class of metabolites. Therefore the histochemical assessment of tissues during progressive stages of seed development is a basic, long felt need and an essential means to understand various biochemical and physiological happenings in the plant-tissue organisation.

Realizing the paucity of information, the present investigation was undertaken which deals with the more important details of various embryological aspects-structure and development of anther and ovule, micro- and megasporogenesis, integument initiation, male and female gametophytes, fertilization, endosperm, embryo and anatomy of seed and fruit in six hitherto unexplored taxa, Dichrocephala latifolia DC. (sub-tribe Grangeineae, tribe Asteroideae), Erigeron multicaulis DC. (sub-tribe Heterochromeae, tribe Asteroideae), Galinsoga parviflora Cav. (sub-tribe Galinsogeae, tribe Heliantheideae), Tagetes minuta Linn. (tribe Helenieae), Cnicus arvensis Hoffm. (sub-tribe Carduineae, tribe Cynaroideae) and Gerbera lanuginosa Benth. (sub-tribe Gerbereae, tribe Mutisiaceae), and the localization of insoluble polysaccharides, total proteins and RNA at different stages of seed development have been contemplated in Galinsoga parviflora.