INTRODUCTION
With over 3000 species spread over 350 genera, members of Brassicaceae mostly inhabit northern hemisphere, particularly its cooler regions. More than half of the total brassicaceous flora is confined to the Mediterranean region - Central Asia - Himalaya belt (Laurence, 1967; Jafri, 1973). In the Indian sub-continent Brassicaceae is represented by over 250 species belonging to 92 genera (Hooker, 1872; Jafri, 1973). The himalayan belt has about 70 genera (Hooker, 1872) out of which 65 are found in Kashmir and adjoining areas (Naqshi, 1977). It is primarily
because the climatic conditions of this region are more akin to the home environment (Mediterranean) of the family than other parts of the Indian subcontinent.

Plants belonging to this family are mostly herbaceous and these can be easily identified on the basis of 4 sepals, 4 diagonally disposed petals, tetradynamous stamens (outer 2 small and inner 4 long), single sessile and seemingly bilocular ovary with parietal placentation and a fruit known as siliquae or silicle.

A large but homogeneous family, such as Brassicaceae, also has its taxonomic problems. Since the time of Linnaeus (1753), the taxa of this family have been grouped under different sections by various taxonomists on the basis of varying criteria (Hayek, 1911; Schulz, 1936 and Jenchen, 1942). Of all these, Schulz's (1936) treatment of this family is more valid, practical and authentic. Because of these reasons the same has been followed in the present study. Schulz (1936) has divided Brassicaceae into 19 tribes. Of these only 9 tribes are represented in the Kashmir valley and adjoining areas (Naqshi, 1977).

Many taxa of this family are economically important. They provide vegetables, vegetable oils and some choice ornamentals. Among the important ones used as vegetables
are cabbage, cauliflower, broccoli, rutabaga, kohlrabi, turnips, brussels sprout and kale (all belonging to the genus *Brassica*), radish (*Raphanus sativus*) and water cress (*Nasturtium officinale*). Seeds of some species of *Brassica* are important source of edible oils. Species of *Matthiola* (stocks), *Iberis* (candytuft), *Erysimum* (wallflower, annual), *Cheiranthus* (wallflower perennial), *Lunaria* (honesty), *Lobularia* (sweet alyssum), *Alyssum* (basket of gold), *Arabis* (rockcress) and *Malcolmia* (virginian stock) appeal to the aesthetic taste of man as choice ornamentals.

Despite their economic importance, taxa of this family have not found favour with the cytogeneticists. Out of 3000 species which represent this family, chromosome numbers of only 850 are on record (Darlington and Wylie, 1955; Mulligan, 1957, 1964, 1965, 1966; Ornduff, 1967, 1968, 1969; Fedorov, 1969; Floors, 1970, 1971, 1974; Aryavand, 1975, 1976, 1978; Gohil, Ashruf and Raina, 1981 and Gohil, Raina and Ashruf, 1981). Keeping in view the easy availability of the material as also the economic importance of various species of this family, this number is rather too small. It is due to the fact that in most of the taxa of this family, the chromosomes are too small for detailed individual analysis. It is also very difficult to make good cytological preparations because of the
presence of oil in many brassicaceous plants. Because of these difficulties, classical works of Jaretzky (1928) and Manton (1932) still remain as the most comprehensive cytological studies made in this family. However, most of the work done, both by Jaretzky (1928) and Manton (1932), is limited to the listing of chromosome numbers only, where also a lot of confusion is come across.

Species of *Brassica*, due to their economic importance as sources of edible oil have, however, been studied extensively by cytogeneticists and plant breeders (Alam, 1936; Catcheaside, 1937; Richharia, 1937a, 1937b; Sikka, 1940; Yarnell, 1956; Harberd, 1972; Sikka and Sharma, 1979).

For the Kashmir valley the only major work is of Naqshi (1977), who studied the taxonomic aspects. From cytological point of view, except for some fragmentary reports (Koul and Gohil, 1973; Gohil and Kaul, 1975, 1976a, 1976b; Koul and Wakhlu, 1976) there is no record of any detailed studies having been conducted. The lack of information regarding cytogenetics of the plants of this family becomes all the more significant because while many of its cultivated taxa are important source of vegetables and vegetable oils in the valley, some
wild species are also used as medicinals or as vegetables. The work of Naqsh (1977) has also raised questions regarding the taxonomic validity of many wild taxa. The present work was initiated to clear some of these points and to understand the cytogenetical behaviour and relationships viz-a-viz evolution in some taxa inhabiting this region.

For the present study, members belonging to three tribes namely Matthioloæae, Hesperideæ and Sisymbrieææ were selected for detailed cytogenetical studies. These three tribes were taken up because they are well represented in the Kashmir valley and adjoining areas and in most of the taxa belonging to these three tribes cytogenetical details had not been studied. Moreover, many of these taxa are medicinally very important and also provide some choice ornamentals.

In all, 21 species representing 11 genera have been studied during the course of present investigation. Cytology of five species, including one genus Tetracme, have been studied for the first time and for three species new chromosome numbers have been established. On the basis of the studies conducted, an attempt has been made to establish relationships between these taxa and the role of various cytogenetical factors in evolution and speciation in them has been discussed.