MATERIALS AND METHODS

Source:

Plants which were collected for the cytological investigations were also used for the present study. Names of the plants investigated, their collection number, locality, geographical location and altitude are already given in Table 1.

Fruit setting:

Since the plants investigated are all cross-pollinated, maintenance of the plants in the orchid nursery did not help in fruit setting. It is but natural that these plants are secluded from the natural pollinating agents. Though plants flowered regularly, since no fruit setting was there, flowers use to wither off. The long lasting nature of flowers differed from plant to plant. In an unpollinated condition Phalaenopsis decumbens, flowers remained in the plant for 3 days. Peristeria elata withered off after 8 days from the day of anthesis. Flowers of Gastrochilus dasypogon and Calanthe masuca remained for 2-3 days whereas those of Spathoglottis plicata and Dendrobium Barbatulum lasted for only 2 days. It is noteworthy to mention, that Peristeria elata being a South American orchid did not set seed even after maintaining them in natural condition. The flowers of these plants are pollinated by Euglossine bees which are restricted to South America (Dressler 1981). Hence these
plants may be species specific in getting pollinated. So all the plants when hand pollinated either by selfing or crossing resulted in fruit setting. In *Peristeria elata* flowers pollinated only after 2nd day of the anthesis resulted in fruit setting. This could be identified by the stigmatic secretion in the flower. In all other taxa pollination on the same day of anthesis resulted in fruit setting.

Flower buds of different sizes and fruits at every 10 days intervals from the date of pollination were collected. Before the fixation, outer perianth parts were removed in flower buds and several transverse cut were made in fruits. These materials were pickled in Formalin-Acetic alcohol for 24 hours. Later they were transferred to 70% alcohol and preserved in the same.

Assorted sets of flower buds and fruits were made before processing the materials. Particularly in fruits, ovary portions were scooped out from the placenta. Following the customary methods, materials were dehydrated in Tertiary-Butyl-alcohol series (Johansen 1940) and finally embedded in paraffin. Sections were cut at 8-10 \( \mu \) thick. Slides were stained in Heidenhain's haematoxylin stain and counterstained in 2% \( \text{C}_{6} \text{H}_{5} \text{O} \cdot \text{H}_3 \text{BO}_3 \) in 90% alcohol (Johansen 1940). Slides were made permanent using DPX mountant. Photomicrography were made using
Kodak Panatomic-X film and printed in Agfa Brovira normal single weight glossy paper. Using Carl-zeiss camera lucida apparatus fixed to Leitz microscope with 8X and 10X eye pieces & 45 x objectives free hand drawings for all the stages were made at the table level. Final drawings were traced and inked on ivory sheets and plates were prepared. These drawings were reprovitted using high contrast Kopex-Pam 35 mm film and finally printed in Agfa Brovira hard single weight glossy paper.