MATERIALS AND METHODS

(a) Field work:

The entire area selected for botanical exploration was divided into suitable small segments with a view to explore these smaller segments intensively. Generally the excursions were for about three days per week, but the duration of botanical exploration was sometimes extended during holidays and depending upon the collections made during outings and the areas covered, and also during the monsoon so as not to miss the ephemeral flora that may come up soon after the rainfall. The excursions were so planned during the tenure of this study that the different places mentioned above were visited at least once every month in different seasons. Normally the excursions would be from 8 A.M. to 2 P.M. but sometimes they may be for the whole day depending upon the distance covered.

During outings, plants were collected in different stages of development, supplemented with ample field notes on the phenology, flowering and fruiting periods, colour and smell of flowers, colour and texture of bark, habit, habitat, relative abundance etc., for each species. In many cases our observations were supplemented by black and white photographs taken during outings (Please see plates II-V).

After returning to the camp at the end of a day's excursion all the plants, collected during outings, were cursorily identified and carefully pressed, numbered and dried in
a customary way and entries were made in field books. The flowers and/or fruits of most of the species were preserved in 4% formalin for further critical study. In the first two years of excursions, all plants were collected during each outing and subsequently the collections were restricted only to those plants which were not collected earlier or for which data were to be supplemented. A restriction to collection of more specimens of the same species was forced due to limitation of space in the herbarium.

By repeated outings to the same area, the relative abundance, distribution, phenology and life cycle of each plant, as far as possible was studied and all the information is included for each species while describing it. In a few cases I have not able to see flowers and/or fruits inspite of repeated search. In some of such cases vegetative characters help in the identification of plants. An account is given in pp. CLXLV - CCI.

During exploration only wild plants and those which have escaped from cultivation are collected. The garden plants and those which are cultivated have not been attended to, because of the increasing volume of work and thereby to avoid a diffuse nature of work. Considerable time has been utilised to study the vegetation of the forests with reference to the frequency, abundance and density of wild species by quadrate methods.

The identification of the plants which have been met with as escapes is done with the help of Manual of cultivated plants by Bailey (1949).
(b) Laboratory work

In the laboratory all the plants were processed in a customary way, mounted and labelled following Santapau (1955a). The final identifications were done by a critical study of each plant and by comparing our observations with the data published in local floras and other taxonomical literature including monographs available to us. Our identifications were finally confirmed by (a) comparing our plants with those in the herbarium of Botany Department of this University, which in their turn are checked at different herbaria in the country and abroad and (b) by comparing our plants with the illustrations published in various taxonomical literature. A reference to such illustrations is given in the text at appropriate places. Some of our identifications were also confirmed by the authorities of Central National Herbarium Calcutta and Botanical Survey of India, Western Circle, Poona.

The herbarium sheets on which the present thesis is based are deposited in the Herbarium of the Department of Botany, Sardar Patel University, Vallabh Vidyanagar.

In order to supplement our visual observations on the vegetation of different ranges, a phytosociological analysis was undertaken. The study was made with reference to density, frequency percentage, abundance and frequency classes (Raunkiaer 1934) by quadrat methods. About ten quadrates were laid down in different direction, in each of the places, in different ranges, so that quadrats represent almost all species
in that area. Further the sights of the places showing diversity in vegetation were, as far as possible, selected for quadrat study. The selection was also motivated to include as many as species as possible in a quadrat. The size of the quadrat was maintained uniform throughout the study (10 x 10 m.) for trees and shrubs. The phytosociological analysis of the different places in each range was made by laying quadrates in the monsoon.

Frequency in percentage, density and abundance were calculated by the following formulae: (Raunkiaer 1934)

(1) Frequency = \( \frac{\text{Total number of quadrats in which species is present}}{\text{Total number of quadrats studied}} \times 100 \)

(2) Density = \( \frac{\text{Total number of individuals}}{\text{Number of quadrats studied}} \)

(3) Abundance = \( \frac{\text{Total number of individuals}}{\text{Number of quadrats of occurrence}} \)

Communities were also named after the species having higher percentage of frequency. When two species had a similar frequency percentage, then abundance was also taken into consideration for this purpose. The species were divided into five frequency classes (Raunkiaer 1934) viz:

<table>
<thead>
<tr>
<th>Class</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>A</td>
<td>1 - 20 %</td>
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<tr>
<td>B</td>
<td>21 - 40 %</td>
</tr>
<tr>
<td>C</td>
<td>41 - 60 %</td>
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<tr>
<td>D</td>
<td>61 - 80 %</td>
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<tr>
<td>E</td>
<td>81 - 100 %</td>
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