Man's existence on this earth has been made possible only because of the vital role played by the plant kingdom in sustained life. Since time immortal, the study of plant constituents in its various aspects has been a fascinating study all over the world. Both for the research chemists and medical men. During the last four decades, the intensive search for the plant constituents of economic importance is being pursued throughout world. Although synthetic organic substances have achieved a substantial share in pharmaceutical application, plant derived substances still remain a vital tool for modern medicines.

The earliest mention of the medicinal use of plants is found in the Rigveda having been written between 4500 to 1600 B.C. During the last decade, the number of new structures reported from plant sources has increased enormously and, among some classes of natural constituent the number of known substances has doubled within this short time span. It is somewhat paradoxical that though chemistry and chemical research had their origins in the study of natural, especially plant, products such a study does not constitute part of the present day chemistry curriculum, and certainly not included in its practical courses. At the same time, research into the chemistry of the animal and plant kingdoms in increasing in scope, be it for the elucidation of rare structures for the purpose of plant taxonomy, or in quest of new compounds of pharmacological interest. Certain of our important drugs are still natural products.
India is a veritable emporium of medicinal plants. Nearly three fourths of the drugs mentioned in various pharmacopoeiae are grown here in natural state. India possess climatic condition varying from torrid to the frigid zones and embraces various tracts of tropical and temperate plains, hills and valleys. In fact India could be termed as the botanical Garden of the world, and the record of botanical wealth, currently constitutes more than 2000 types of medicinal and aromatic plants. It is estimated that we have about 17,000 species of angiosperm alone growing in our country. Add to this large number of lower plants, like algae, fungi, lichens, bryophytes and pteridophytes are available to the phytochemists. The vast Indian flora spread from the Himalaya mountains down to Deccan plateau and archipelag of Andaman and Nicobar and Lakshdweep, besides enhancing the panoramic beauty of these areas is of great significance in relation to its economic utility for the welfare of the mankind. We look upon the plant kingdom as an almost untapped arsenal of ready made compound which once isolated can serve us at least in three ways.

1. Directly as food, fibre, dye and medicinal.
2. Starting material for the synthesis of more complex compounds.
3. As academically interesting or rewarding exercises.

This wide panorama of plant kingdom is an open field for the exploration of hitherto undiscovered substances for which there are greater possibilities when taken advantages of the improved technique of isolation such as paper and thin layer chromatography, HPLC etc. and elucidation of the isolated compound by different physical and chemical methods. The isolation of intermediate and precursors in biogenetic pathways, a field which has witnessed
intense activity over the last decade, have given a fresh lease for the study of chemistry of natural products. Biogenesis has come out as a boon for the assignment of different and otherwise difficult structures.

What is the future of plants in medicine? Are plants on their way out? Will the synthetics replace all vegetable drugs? The answer is no. No doubt a number of active principles have been synthesized and will continue to be synthesized but it is the plant, the chemical laboratories of nature, which first give us clue to more and more kinds of active principles and in this respect too, plants must continue to remain important for us.

During the recent years, importance is duly attached to the systematic phytochemical investigations in different groups of plants rather than sporadic choice of a plant or parts these of for investigations into the secondary plant products. The groupwise investigation in the plants and classification of the constituents isolated from them to the recently developed subject of chemotaxonomy. Chemotaxonomic studies would also bring never products of economic importance, it would rather enlarge the field and increase the possibility of obtaining the secondary products of choice from related botanical species or families.

The present chapters on the flavonoids has three main aims: (1) to provide an out line of their structural variability and a key to their identification (2) to describe their natural distribution in some detail and draw attention to their potential systematic importance and (3) to summarise what is known to their inheritance biosynthesis, function and economic importance. The material presented here should be a useful implement to organic chemists,
plant biochemists and taxonomists and to botanists in general. Of the food colorants the carotenoids are of particular importance, not only because they serve as excellent colorants but also because they represent a major dietary source of Vitamin A. Diosgenin, sitosterol, stigmasterol are steroid drug precursors. Steroid drugs can be classified into three main groups on the basis of their applications namely corticosteroids, sex hormones and anti-fertility compounds. Corticosteroids which include cortisone, hydrocortisone, and their improved derivatives are known to possess anti-inflammatory properties and provide relief from arthritis, rheumatism, and asthma. Sex hormones, male and female, are used as substitution therapy for deficiency in natural hormones. Testosterone, one of the most potent of male sex hormones, and its modifications are used to treat testicular insufficiency and as anabolic to rebuild bodies wasted by severe illness or stunted by abnormal growth. Estradiol, estrone and progesterone the female sex hormones, are useful in the treatment of gynaecological disorders. Along with their modifications, the female sex hormones serve as anti-fertility agents- the active ingredients or oral contraceptive pills.

The studies reported in this thesis concern with the chemical investigation of Marchantia polymorpha Linn., Pluchea lanceolata C.B. Clarke, Tecoma argentea Britt., Kleinhovia hospita Linn. Costus sanguineus Donn., Cochlospermum vitifolium Spreng. The investigation on these plants is described in chapters I to VI. Chapter VII is a review article entitled "Commercial products of Sugar cane". The isolated constituents from the above mentioned plants are summarized below: