CHAPTER-I

INTRODUCTION

The beginning of Gondwana Era is marked at the Upper Carboniferous period and it is concluded at the mark of Lower Cretaceous, covering the period of 120 million years. Several changes took place in the Upper Carboniferous which resulted into a redistribution of sea and land masses. In the southern continent a series of land masses formed the 'Gondwana land'. It consists of countries like South Africa, Australia, South America, India, Antartica and Madgascar, these countries show similar type of rocks, flora, fauna and palaeo climate. The name Gondwana land was derived from the country of Gond tribes present in central India. The term Gondwana was first published by Feistmantel (1876), Medlicott (1872) introduced it in an unpublished report. Fox (1931) used the term 'Gondwana land'.

In the peninsular India, the Gondwana system covers Upper Palaeozoic and Mesozoic strata deposited in river valleys, while extra peninsular deposits are also present they show marine origin. The Gondwana rocks are of lacustrine and fluviatile origin and found in lake basins, river valleys and rift valleys.

The Gondwana rocks in India were developed along two sides of triangular peninsular region, they are found in

Godavari valley, Mahanadi valley and Damodar valley. They are also found in Cutch, Kathewad, Rajasthan and on the East Coast of India. The extra peninsular deposits occur at Punjab salt range, Assam, Kashmir, Hazara etc. These are isolated patches and shows large distance from each other. There are controversies and disputes among the Geologist and Palaeobotanists regarding the age and divisions of Gondwana systems.

According to Medlicott and Blanford (1879-1887), Oldham (1893), Cotter (1917) and Fox (1931), the Gondwana system is divided into two divisions namely Lower Gondwana and Upper Gondwana; on the other hand Feistmantel (1882), Vredenburg (1910) and Wadia (1957), it is divided into three divisions such as Lower Gondwana, Middle Gondwana and Upper Gondwana.

According to Lele and Surange (1964) two distinct floras developed in the Gondwana period. Glossopteris flora in the lower Gondwana and Ptilophyllum flora in the Upper Gondwana flora.

Fox (1931) suggested that, Ptilophyllum flora emerges after the complete disappearance of Glossopteris flora, therefore, he suggested that creation of Middle Gondwana is not justified.

In the South Rewa Gondwana basin parsora beds and other interesting localities are known as 'Transitional beds', this name is given due to their palaeobotanical and lithological characters. Feistmantel (1882) worked on the fossil plants

of these beds and observed that they show a combination of Upper Gondwana and Lower Gondwana plants. Further he established a new division Middle Gondwana occupying the place between lower and Upper Gondwana.

Upper Gondwana	Jabalpur Kota Rajmahal	Jurassic
Middle Gondwana	Parsora Panchet Damuda	Triassic
Lower Gondwana	Karharbari Talchir Talchir boulder beds	Permocarboniferous

Vrederburg supported three fold division of Gondwanas suggested by Feistmantel on the evidences of animal fossils; eminent Geologist Wadia (1957) accepted the hypothesis of Middle Gondwana due to their lithological characters, fauna and climatic characters.

Recently, S.D. Saxena (1952) studied the fossil plants of parsora, pali and karkati beds and found that the flora shows a mixture showing presence of Glossopteris and Dicrodium.

Lele (1955-62, 1962-a, 1964) has made large contribution on this topic and gathered the additional evidences.

Saxena (1961-63) made further contribution on this area.

Finally on the basis of palaeobotanical work Lele (1964) suggested that Gondwana system in India is divided into three distinct parts, each representing a distinct flora.

Lower Gondwana - Glossopteris flora
Middle Gondwana - Dicroidium flora
Upper Gondwana - Ptilophyllum flora

Surange (1966); Maheshwari (1966-b) and Bose (1966-a, 1966-b) supported Lele's suggestion. Further, it was suggested that Glossopteris is an 'Index fossil' of lower Gondwana, Ptilophyllum is an 'Index fossil' of upper Gondwana and Dicroidium represents the Middle Gondwana flora.

Bose (1966-a) further added that the Gondwana period should be divided into series and stages and not into divisions like lower, Middle and Upper. He proposed a Gondwana Committee having Geologist and Botanist to solve the problem of smaller sub-divisions. It can be done by mapping the area and studying the floras found there.

Surange et al. (1974) have published an account of palaeobotanical research work in India. Following workers have made major contributions to Gondwana flora of India. Feistmantel (1876, 1889), Zeiller (1902), Arber (1905), Seward and Sahni (1920), Sahni (1928), Pant (1958-62), Bharadwaj (1953), Bose (1974), Sah (1958), Surange (1966-1974), Vishnu-Mitre (1953-59) etc.

The present work deals with the material collected from localities present along the East-Coast of Tamilnadu, the localities are exposed at Sriperamatur and Vellum described as Sriperamatur beds. Among the various Upper Gondwana localities most of the work is done on Rajmahal Hills in Bihar, Jabalpur in Madhya Pradesh and Cutch in Gujrath. In the South, most of the work is done on Vemavaram beds, Raghavapuram beds and recently Gangapur beds in Andhra Pradesh, but very little work is done on the localities in Tamilnadu such as Sriperamatur beds and Sivaganga formation. Hence it was decided to collect the material from well known localities Sriperamatur and little known locality Vellum.

DISTRIBUTION OF UPPER GONDWANA LOCALITIES IN INDIA.