

Occurance of two species of *Dictyozamites*, Oldham, 1863 from Uttatur Formation, Tamil-Nadu, India

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Abstract: -

The paper deals with morphological studies of the fossil flora of Uttatur Formation plant beds in Tiruchirapalli Early Cretaceous age. Gymnospermic impressions are described.

Keywords: Fossil plant impression, Uttatur formation plant beds, early cretaceous age.

Introduction: -

The Cauvery Basin covers some 25000 km² of the TamilNadu region and extend into the Bay of Bengal and the Gulf of Mannar (Prabhakar and Zutshi, 1993). The Basin constitute the southernmost sedimentary basin along the east coast of India. Recent researches have demarcated precise formational limitations and categorised fossile content with their stratigraphic zonation (Sundaram et al, 2001, Nagendra et al 2013). The Cretaceous rocks are generally grouped into 3 litho units namely Uttatur, Trichinopoly and Ariyalur in ascending order.

The Cycadophyta are represented by genera *Dictyozamites* belonging to family Williamsoniaceae. The genus was frond pinnate, linear, falcate or rounded base asymmetrical and auriculate, apex acute, obtuse or round and reticulate venation showing affinities of the family Williamsoniaceae. The relative species of diversity of various plant groups in the Cauveri Basins shows predominance of bennettitaleans-34%, followed by pteridophytes-33%, coniferales-18%, pteridospermales-6% and pentoxyleans, cycadales, and ginkgoales poorly represented-3%. It is characterized by spirally arranged, appressed leaves having thick lamina. The leaves are triangular conical or rhomboidal in shape. From India twelve species are reported.

Several plant impression have been collected from localities in Tiruchirapalli district of Tamil-Nadu. The impression was preserved on Ferruginous Sandstone and reddish-yellow in colour. Following two promising impressions are described.

Material And Method:-

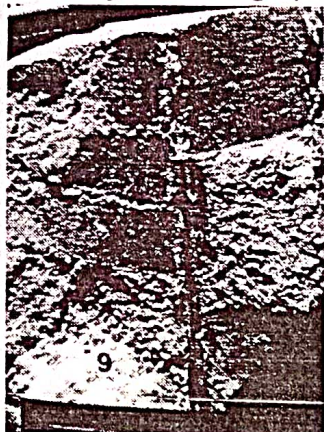
The impression gives morphological of the plant preserved. In the field the impression were checked for the strength of the material. Some shales are brittle in nature and easily get disintegrated. The other are more durable and can easily be protected. The impression on brittle material were carefully packed by covering cotton material around them and then wrapped in the newspaper bag. The durable material is directly packed in the newspaper bag. All these packed in plastic bag. They were carefully transported to the laboratory. In the laboratory the impression were cleaned by using soft hair brush. Each specimen is properly lablled. This can be done by applying a white paint on corner of the material. The painted area is further labeled by using India ink.

First habit sketches of the plants were drawn on ivory sheet. The figures are drawn proportionately. Finally they are inked and properly cut of the material on them. The explanation of textfigures is given with magnification calculated. The specimens were further photographed using colour film. For this purpose digital camera was used. The developing and printing of the colour film was processed. The enlargement of desirable size were made. The prints were fixed on the cardsheet which forms the plate figures. The explanation of plate figures is given with the magnification calculated.

I) Result And Discussion-

Genus- *Dictyozamites* Oldham 1863*Dictyozamites feistmantelii* Bose and Zeba-Bano

(Text Fig. 1, Plate Fig. 1)



The specimen is a pinnate frond measuring 4.5 cm in length and 3.5 cm in breadth. Rachis is exposed, longitudinally striated and 2mm thick. Basal part is devoid of pinnae. Pinnae alternate, slightly sparse, and do not show overlapping. Pinnae are linear to lanceolate. They measure 2 cm long and 0.8 cm broad. Apex is obtuse. Acroscopic and basisopic margins are auriculate. Basal part of pinnae produce a stalk. Pinnae are attached by this stalk to the rachis at an angle of 80° . Veins arise from basal part of pinnae. they divide and form anastomosis. The meshes in the middle part are elongated while those near margins and bases are smaller in size.

Identification and Comparison :

The leaf agrees with the character of *D. Feistmantelli* Bose and Zeba Bano in having, 1) Exposed rachis, 2) Linear to lanceolate pinnae arranged in slightly spars mannei, 3) Apex obtuse, 4) Both acroscopic and basisopic margins auriculate, 5) Presence of stalk produced from middle part of pinnae base of which they attached to rachis. 6) venation showing reticulate pattern forming elongated meshes in the middle part and short meshes near margins.

Hence it is defined and described as *D. feistmantelii* Bose and Zeba Bano. It differs from *D. falcatus* in having exposed rachis and auriculate margins. The important feature is formation of stalk by which it is attached to the rachis. It also differs from *D. sahnii* in having medium sized pinnae and presence of stalk. *D. Sahnii* is sessile and pinnae are longer.

According to Bose and Zeba-Bano (1978) *D. feistmantelii* is quite common along the East Coast of India. It is also reported from Hoshangabad district in Madhya Pradesh. It is abundant in Vemavaram. Present specimen is collected from Karu in TamilNadu. This suggest wider distribution of *D. feistmantelii* along the East Coast.

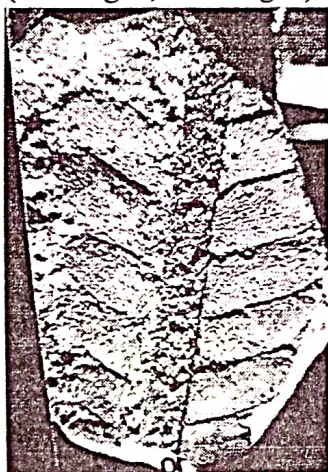
Type - KAR/7/99

Locality - Kari, District- Tiruchirpalli, TamilNadu

Horizon - Early Cretaceous, Uttatur Formation

Dictyozamites indicus Feistmantel

(Text Fig 2., Plate Fig 1.)



The specimen is a fragmentary pinnate leaf measuring 308 cm in length and 3 cm in breadth. It is uniformly wide along the available length. Rachis is broad 3 mm thick, and partially covered by pinnae bases. Pinnae are closely arranged and touching the next pinnae above. Pinnae are linear to lanceolate in shape and smaller size. They measure 1.2 cm long and 0.6 cm broad. Acroscopic and basisopic margins auriculate. Margins are entire and apex in obtuse. Pinnae are attached to the rachis by auriculate base at an angle of 70° veins emerge from the base, diverge and then divide to form meshes of equal size.

Identification and comparison :

The specimen resembles with the morphological characters by *Dictyozamites indicus* Feistmantel given by Bose and Zeba-Bano (1978) in having uniformly wide smaller pinnae, Acroscopic and Basisopic margins, auroculate. Obtuse apex, pinnae are attached at an angle of 70° . Veins diverge and divide to form meshes of equal size. Therefore it is identified and described as *D. indicum* Feistmantel. It is compared with *D. indicum* described by Bose and Zeba-Bano (1978) from Maharjpur in Rahmahal hills in having smaller pinnae, obtuse apex and venation pattern. It resembles with *D. minusculus* described by Menendez (1966) from Argentina in shape and pinnae size. It is also recembles with *D. krusinensis* described by Korino (1972) from East Malaysia in smaller pinnae. In India *D. Indicum* is widely distributed and reported from Rajmahal Hills, in Bihar, Parsapani in Madhya Pradesh and Vemavaram in Andhra Pradesh. Present specimen is collected from Marvatur in TamilNadu. This suggests its wider occurrence on East Coast.

Type : MARV/6/98

Locality : Marvatur, District- Tiruchirpalli, TamilNadu

Horizon : Early Cretaceous, Uttatur Formation

Conclusion-

The Mesozoic Gondwana deposits in East-coast of India occurs in series of detached outcrops. East Coast Gondwana deposits occurs in different Cauvery river basin. The Cycadophytes are represented by genera belonging to family Williamsoniaceae. The present work on the basis of mega fossil studies support the Lower Cretaceous age.

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