

THE OCCURRENCE OF *CYCADOPTERIS* ZIGNO IN THE MESOZOIC ROCKS OF INDIA

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ABSTRACT

A fragmentary frond of *Cycadopteris* sp. is reported here for the first time in India. The upper cuticle of the leaf is also described.

INTRODUCTION

AMONG numerous carbonized specimens collected in March 1957 from Bansa, South Rewa Gondwana basin, Madhya Pradesh, I got a small fragmentary specimen (PL. 1, FIG. 1) which in its external appearance showed a marked resemblance to some of the species of *Thinnfeldia* Ett. and *Dicroidium* Gothan. After the specimen was photographed, a portion of a pinna was kept for maceration in a mixture of $\text{HNO}_3 + \text{KClO}_3$. When the maceration was complete, the upper and lower sides of the pinna were separated. After the two sides were detached from each other, I found the upper side to be much bigger in size than the lower. So I repeated the maceration with an almost entire pinna. Here, too, I observed the same thing. Then I finally made a transfer of the whole frond on a glass slide following Walton's (1923) transfer method. When the lower side of the leaf was exposed, I found the margins of all the pinnae turned inside. It was then clear to me that what I had thought to be the upper and lower sides in the two previous macerations were actually the pinnae with their turned-in margins. Once the transfer of the whole frond was ready, I made an attempt to separate the real upper and lower sides. The cuticle preparation showed very fine cells of the upper surface like *Cycadopteris*, and also clearly showed a turned-under margin. Both these points agree well with *Cycadopteris*. The under cuticle was rather difficult to get. I could only get little obscure wisps which showed some objects that could well be *Cycadopteris* stomata, but there is no convincing evidence of their being really so. There were also fairly numerous indistinct objects that looked like the large finger-like papillae, but again I am not sure whether that is what they are. Due to the imperfect

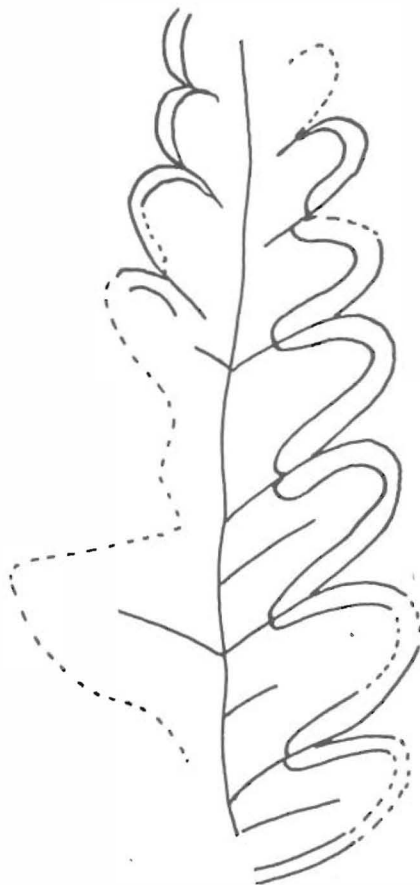
preservation of the leaf and the lack of knowledge regarding its stomata, I have here refrained from giving any specific name.

DESCRIPTION

Cycadopteris sp.

Pl. 1; Text-fig. 1

Leaf incomplete both at the base and apex, available length 3.2 cm., broadest region 1.5 cm. Lamina pinnate, very thick and



TEXT-FIG. 1 — *Cycadopteris* sp. showing the turned-under margin, No. 28692. Torn margins shown by broken lines. $\times 4$.

leathery. Rachis slender. Pinnae closely set or slightly overlapping, obovate; apex rounded; base truncate; margin revolute, turned-in margin about 1 mm. wide. Only the median vein visible in some of the pinnae, never reaching the apex.

Cuticle thick, upper and lower sides firmly attached. Epidermal cells of the upper side polygonal, oval or circular; lateral- and end-walls very thick and straight; surface-wall thin and smooth, mostly with a median slit or sometimes centre region not preserved. Cells of the lower side not clearly seen.

Locality — Bansa, about 6 miles southwest of Chandia, Madhya Pradesh.

Horizon — Jabalpur Series, South Rewa Gondwana basin.

Collection — Specimen No. 28692 of the Birbal Sahni Institute of Palaeobotany Museum.

COMPARISON AND DISCUSSION

The above specimen gives very little information regarding its shape and cuticular structure. We do not even know whether

it is a portion of a simply pinnate or bipinnate leaf. Therefore, it is not possible to compare our specimen fully with the already known species of *Cycadopteris*.

The present specimen comes nearest to *C. anglica* Gothan (1914) and *C. zeilleri* Antevs (1915) in having pinnae with only turned-under margin. *C. anglica*, however, differs from our specimen in having mostly polygonal epidermal cells and also the lateral- and end-walls of its cells being not so thick as in *C. sp.* *C. zeilleri* has larger apical and lateral pinnules. Both *C. brauniana* Zigno described by Hirmer (1924) and *C. jurensis* Schimper described by Salfeld (1907) and Hirmer (1924) have not only a turned-under margin, but also a turned-under flange over the midrib at least, and often over the first secondary veins also. This flange is absent in our material.

ACKNOWLEDGEMENT

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EXPLANATION OF PLATE 1

1. *Cycadopteris* sp., No. 28692. $\times 1$.
2. The above specimen as seen from the lower side after the transfer preparation. $\times 1$.
3. The specimen in figure 2, magnified. $\times 2$.
4. Upper epidermal cells, slide No. 28692/6. $\times 200$.



1



2



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