

SOME PTERIDOPHYTIC REMAINS FROM THE MESOZOIC ROCKS OF INDIA

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ABSTRACT

In the present paper *Todites indicus* (Oldham & Morris) Bose & Sah from Sehora, district Narsinghpur in Madhya Pradesh and *Cladophlebis* sp. cf. *C. longipennis* Seward from Darad, near Than in Kathiawar have been described.

INTRODUCTION

THE pteridophytic remains from Sehora, Sher river district Narsinghpur (Madhya Pradesh) were first described by Feistmantel (1877). Later Bose (1960) has also described a few more specimens from the same locality. Our knowledge of the filicinean remains, occurring in the vicinity of Than, Kathiawar is mainly based on the work by Feistmantel (1880), Fedden (1884), Rao and Vimal (1950) and Roy (1968). The present paper describes *Todites indicus* (OLDHAM & MORRIS) Bose & Sah from Sehora, and *Cladophlebis* sp. cf. *C. longipennis* Seward from Darad, near Than.

DESCRIPTION

Family — OSMUNDACEAE

Genus — *Todites* Seward, 1900

Todites indicus (OLDHAM & MORRIS) Bose & Sah

Pl. 1, Figs. 1, 2; Text-fig. 1

Sterile and fertile fronds of *Cladophlebis indica* described by Oldham & Morris (1863) and Sahni & Rao (1933) have recently been described by Bose & Sah (1968) as *Todites indicus* (OLDHAM & MORRIS). This species is very common in the Rajmahal hills, Bihar. Sterile fronds of *T. indicus* are also commonly met with near Chandia, South Rewa Gondwana basin. Recently a very badly preserved detached sterile pinna has also been collected from Sehora. The Sehora specimen resembles more the specimens from Chandia where the pinnules are less frequently notched. The description of Sehora specimen is as follows:

Pinna 8.3 cm. long and 2 cm. broad. Rachis 0.5 mm. broad throughout its entire length. Pinnules slightly falcate, distant, opposite or sub-opposite 1 cm. long, 0.3 cm. broad at base, arising at an angle of about 75° to almost right angle, margin entire. Bases of pinnules mostly touching each other. Midrib very prominent, secondary veins arising at wide angle (about 70°-75°) mostly forking once.

Collection — Specimen No. 33878 of the Birbal Sahni Institute of Palaeobotany, Lucknow.

Locality — Sehora, District Narsinghpur, M.P.

Age and Horizon — Lower Cretaceous; Jabalpur Stage.

UNCLASSIFIED FERNS

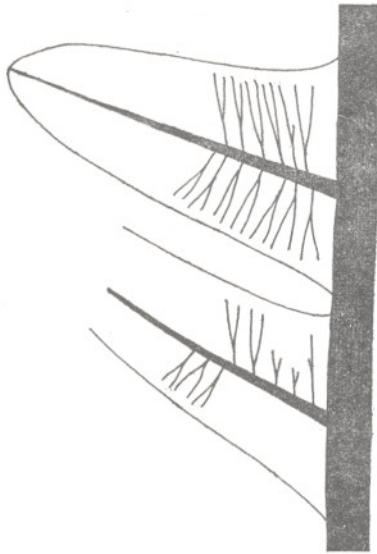
Genus — *Cladophlebis* Brongniart, 1849

Cladophlebis sp. cf. *C. longipennis* Seward

Pl. 1, Figs. 3-5; Text-figs. 2A, B

Report of pteridophytic remains from Kathiawar is very meagre. So far only *Gleichenites*, *Matonidium*, *Weichselia*, *Cladophlebis* and *Sphenopteris* have been reported. Roy (1968) described *Cladophlebis* sp. cf. *C. longipennis* Seward based on very fragmentary specimens showing only one pinna. The present collection includes 3 well preserved specimens of *Cladophlebis* sp. cf. *C. longipennis*, showing bipinnate nature of the frond. The description is as follows:

Frond bipinnate, incomplete, largest specimen measuring 14.5 cm. in length, 6.5 cm. in width. Rachis 1 mm. broad, showing a median groove running along entire length. Pinnae incomplete, linear, alternate, 2.8 cm. long, 0.2-0.7 cm. broad, arising at an angle of about 50°-55°, less towards apex (about 20°-30°). Pinnae rachis showing longitudinally running single median-groove. Pinnules rhomboidal, alternate or sub-opposite, separate, sometimes touching each other, 0.5 cm. long, 0.3 cm. broad



TEXT-FIG. 1 — *Todites indicus* (Oldham & Morris) Bose & Sah — two pinnules showing venation. No. 33878. $\times 8$.

at base, arising at an angle of about 50° . Acroscopic margin constricted, basiscopic margin slightly decurrent; margin entire, upper margin usually straight, lower margin curving upwards to form acute apex. Lowermost pinnules of each pinna arising on basiscopic side slightly larger than other pinnules, lobed, placed closer to main rachis from where pinna arises, nearly at right angle or slightly reflexed downwards. Mid-rib of pinnules faintly discernible, secondary veins very rarely visible, forked or unforked, usually forking once.

Collection — Specimens Nos. 33879 and 33880 of the Birbal Sahni Institute of Palaeobotany, Lucknow.

Locality — Darad, near Than (Kathiawar).

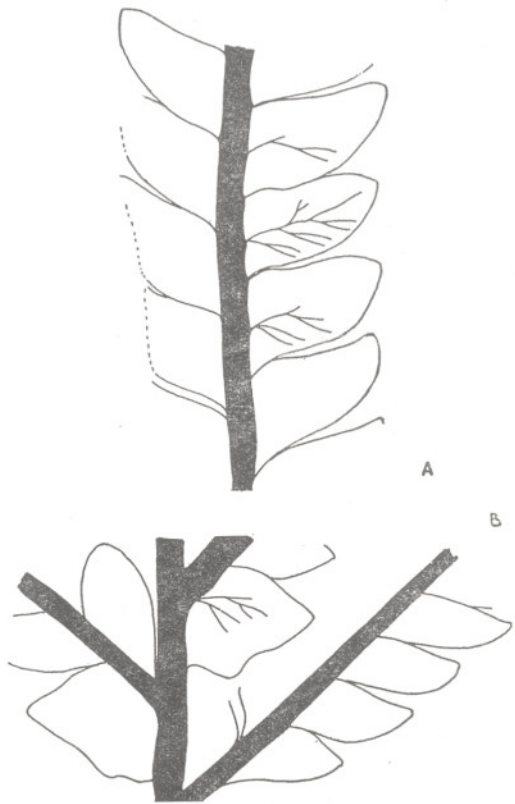
Age and Horizon — Lower Cretaceous: Umia Stage.

Comparison and discussion — Seward (1894) instituted *Cladophlebis longipennis* for some Wealden (Ecclesbourne) specimens having linear-lanceolate pinnae with short rhomboidal pinnules with slightly constricted bases. The present specimens are very similar to *C. longipennis* (PL. IX, FIG. 1, 1a) of Seward in general shape of pinnae, pinnules and venation. They also resemble the specimens of *C. sp. cf. C. longipennis* described by Bose (1960) from Sehora in general habit and shape of the pinnules.

Bose's specimens are, however, only detached pinnae.

C. longipennis resembles most *C. sriyatavae* Gupta (1954) described from the Rajmahal hills, Bihar in general appearance of frond. In both, the pinnule closest to the primary rachis is slightly bigger than the others. But the present species differs from the Rajmahal species in having pinnules with smooth margin, in the latter species the margin is not quite smooth. The resemblance is so close that in my opinion *C. sriyatavae* should also be merged with *C. longipennis*.

Remarks — *Cladophlebis longipennis* was first described by Seward in 1894 from the Wealden of Ecclesbourne. Later in 1925 from the Cretaceous of Greenland he described the original specimens of *Pteris longipennis* Heer as *Cladophlebis longipennis*.



TEXT-FIG. 2 — *Cladophlebis sp. cf. C. longipennis* Seward — A, a few pinnules showing venation. No. 33879. $\times 4$. B, lowermost pinnule showing venation. No. 33879. $\times 4$.

This species is entirely different from *Cladophlebis longipennis* Seward (1894) and my specimens resemble only *C. longipennis*

Seward (1894). In my opinion the Greenland specimens are quite different from the Ecclesbourne specimen.

REFERENCES

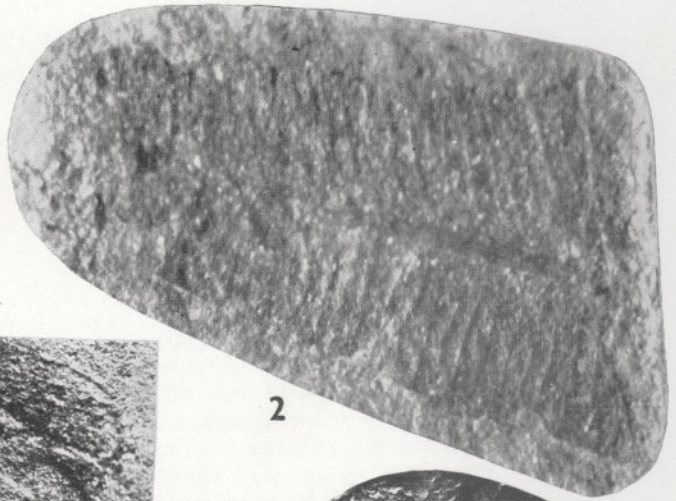
- BOSE, M. N. (1960). The fossil flora of the Jabalpur Series-2. Filicales. *Palaeobotanist*. **7**(2): 90-92.
- BOSE, M. N. & SAH, S. C. D. (1968). Some pteridophytic remains from the Rajmahal hills, Bihar. *Palaeobotanist*. **16**(1): 12-28.
- FEDDEN, F. (1884). The geology of the Kathiawar peninsula in Guzerat. *Mem. geol. Surv. India*. **21**(2): 1-63.
- FEISTMANTEL, O. (1877). Flora of the Jabalpur group (Upper Gondwanas) in the Son-Narbada region. *Mem. geol. Surv. India. Palaeont. indica*, Ser. 11. **2**(2): 1-25.
- FEISTMANTEL, O. (1880). Notes on the fossil plants from Kattywar. *Rec. geol. Surv. India*. **13**(1): 62-67.
- GUPTA, K. M. (1954). Notes on some Jurassic plants from the Rajmahal hills, Bihar, India. *Palaeobotanist*. **3**: 18-25.
- OLDHAM, T. & MORRIS, J. (1863). Fossil flora of the Rajmahal Series in the Rajmahal hills. In "fossil flora of the Gondwana System". *Mem. geol. Surv. India. Palaeont. indica*, Ser. II. **1**(1): 1-52.
- RAO, A. R. & VIMAL, K. P. (1950). On a small collection of plant fossils from Saurashtra. *Curr. Sci.* **19**: 175-176.
- ROY, S. K. (1968). Pteridophytic remains from Kutch and Kathiawar, India. *Palaeobotanist*. **16**(2): 108-114.
- SAHNI, B. & RAO, A. R. (1933). On some Jurassic plants from the Rajmahal hills. *J. Proc. Asiat. Soc. Beng. N.S.* **27**(2): 183-208.
- SEWARD, A. C. (1894). Catalogue of the Mesozoic plants in the department of Geology British Museum. The Wealden Flora. Pt.1 - Thallophyta-Pteridophyta. London.
- SEWARD, A. C. (1925). Notes sur la flore Crétacique du Groenland. *Livre julaire. Soc. géol. Belgique*.

EXPLANATION OF PLATE 1

1. *Todites indicus* (Oldham & Morris) Bose & Sah No. 33878. × 1.
2. A portion of the above magnified, showing venation. × 16.
3. *Cladophlebis* sp. cf. *C. longipennis* Seward. No. 33879. × 1.
4. *C.* sp. cf. *C. longipennis*. No. 33880. × 1.
5. *C.* sp. cf. *C. longipennis*; two pinnules magnified showing venation. No. 33879. × 8.



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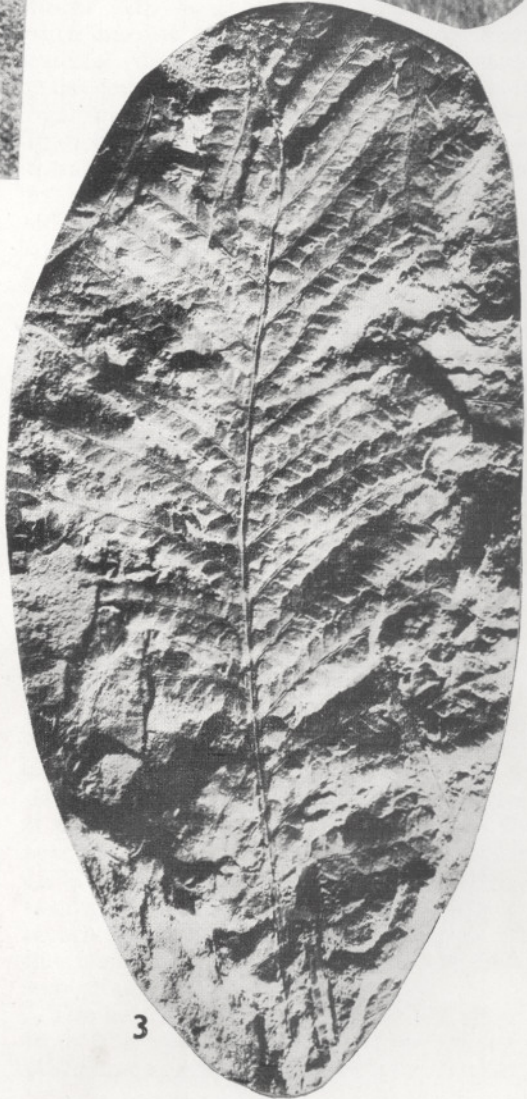
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