

THINNFELDIA CHUNAKHALENSIS SP. NOV. FROM THE JURASSIC OF THE RAJMAHAL HILLS, BIHAR

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ABSTRACT

A new species of *Thinnfeldia* Ett., from Chuna-khal, Rajmahal Hills, Bihar, has been described. The pinnules are characterized by their ovate-elongate form, slightly decurrent base, and a prominent straight midrib giving off lateral veins which are usually forked more than once.

INTRODUCTION

THE only species, so far known, of *Thinnfeldia* from the Jurassic rocks of the Rajmahal Hills is *T. indica*. Under this species Feistmantel (1877) also included the forms previously referred by Morris (OLDHAM & MORRIS, 1863, PL. 27, FIG. 2) as *Pecopteris* (?) *salicifolia*. The other known Jurassic species from India are *T. subtrigona* Feistm. and *Thinnfeldia* sp. from Vemavaram and Sripermatu respectively. Both these species from Madras Coast along with *T. odontopteroides* (Morr.) Feistm. from Ramkola Coalfield and Parsora were later described by Antevs (1914, p. 55) under *Dicroidium odontopteroides* (Morr.) Gothan. Apart from these only two other species, viz. *Thinnfeldia hughesi* (Feistm.) Seward and *T. sahnii* Sew., are known from the Triassic rocks of Parsora.

The specimens described in this paper were collected by one of us (SAH, 1955) near the village Chunakhal (25°13'30"N.; 87°29'52"E.), about 3 miles south of Mirzachowki railway station, Rajmahal Hills, Bihar. A few yards east of the village Chunakhal two well-marked intertrappean beds are exposed at the base of the Chunakhal Hill. The lower intertrappean bed is formed of hard porcellanoid shale, greyish in colour, while the upper bed is of soft compact shale, whitish grey in colour. The present specimens were collected from the upper intertrappean bed and all of them were found preserved as mere impressions, usually stained yellow.

The specific name is given after the locality from where these specimens were collected.

Diagnosis — Fronds imparipinnate, rachis stout; pinnules alternate, nearly sub-oppo-

site, widely spaced, broadly ovate to ovate-elongate, margin entire, apex acute or slightly rounded, base narrow, lower margin sometimes slightly decurrent; venation alethopteroid, mid-rib prominent, originating without any curvature and persisting nearly to the apex; secondary veins numerous, giving off slightly arched and mostly twice-forked lateral veins; terminal pinnule ovate-acuminate, broad at the base and tapering to a pointed apex.

Holotype — B.S.I.P. No. 24469.

Paratype — B.S.I.P. Nos. 24470, 24471.

Locality — Chunakhal, Rajmahal Hills, Bihar.

DESCRIPTION

Thinnfeldia chunakhalensis sp. nov.

Text-fig. 1, A-D

In all ten fragmentary specimens were collected. In none of them the basal region is preserved. Therefore, reconstruction of the entire frond is not possible. Most of these are characterized by broadly ovate pinnules with somewhat rounded apex, but in one of them (TEXT-FIG. 1, C-D), the apex of the terminal pinnule appears to be broadly rounded and slightly notched. The impression is faint at this region and, therefore, this feature cannot be correctly ascertained.

DISCUSSION

The pinnules of the Chunakhal specimens appear to be quite distinct in their form, venation and mode of attachment from any of the so far known species of *Thinnfeldia*.

Thinnfeldia indica Feistm. shows a superficial resemblance with our specimens only in their general form. The pinnules of *T. indica* are characterized by their rhomboid-lanceolate shape, acuminate apex, sinuate margins and a comparatively more decurrent base, whereas in *T. chunakhalensis* the pinnules are shorter and broader. Again the two specimens can be distinguished by their



TEXT-FIG. 1.—*Thinnfeldia chunakhalensis* sp. nov. A, a frond showing the decurrent habit of the pinnules. B.S.I.P. No. 24469. $\times 1$. B, another frond showing ovate-elongate pinnules. B.S.I.P. No. 24470. $\times 1$. C, a frond showing the terminal pinnule with narrow base and broad obtuse apex. B.S.I.P. No. 24471. $\times 2$. D, a terminal pinnule of a frond showing the form and venation. B.S.I.P. No. 24471. $\times 1$.

venation. While the midrib in *T. indica* is feebly marked and arched at the base (FEISTMANTEL, 1877; PL. 39, FIG. 1, p. 35), it is straight and strongly marked in our specimens. The secondary veins in the former are fewer and singly forked whereas in our species they are numerous and forked twice.

The Chunakhal species shows some resemblance with *T. hughesi* (Feistm.) Sew. in the general habit of the frond. *T. hughesi*, however, markedly differs in the much larger size of its fronds and in their leathery appearance. Moreover, the pinnule bases in *T. hughesi* are broad and the secondary veins mostly singly forked while in our specimens

the pinnule bases are much narrower and the secondary veins mostly twice-forked. *Thinnfeldia odontopteroides* (Morr.) Feistm. differs from our species chiefly in possessing ovate and smaller pinnules and also in having odontopteroid venation. *T. sahnii* Sew. (1932) is characterized by its thick, finely tuberculate and short pinnules, attached to the rachis by a broad base. The venation of *T. sahnii* is also quite distinct from our specimens, mostly being without a midrib and possessing spreading forked veins.

Among the foreign species, the Chunakhal specimens show some resemblance with the fronds of *T. lancifolia* Morr. described by

Du Toit (1927, pp. 332-334) from the Moltano beds of South Africa, especially in the twice-forking nature of the secondary veins, but *T. lancifolia* differs essentially in having pinnules with a broad base and an inconspicuous midrib.

The pinnules of the present collection show resemblance to some extent with *T. constricta* Halle (1913, p. 45, FIG. 10, a-c) from Graham Land, in their mode of insertion and possessing a narrow base. However, both the species can be easily distinguished as *T. constricta* is characterized by its narrowly lanceolate and often rhomboid pinnules with comparatively fewer, straight and singly forked veins.

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