

SOME OBSERVATIONS ON THE GENUS *CONTIGNISPORITES* DETTMANN 1963

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ABSTRACT

Contignisporites Dettm. is represented by 6 species in the coals of the Jabalpur Series (Lower Cretaceous, India) out of which 2 species, i.e. *C. psilatus* sp. nov. and *C. dettmannii* sp. nov. have been proposed new. Both the new species are distinct from others by having the equatorial region of each contact face and the interradial polar exine free from sculpture although some specimens of *C. dettmannii* sp. nov. possess some inconspicuous features, viz. muri-like elevations on the proximal face of the central body. Such forms seem to bridge the gap between those which either have proximally laevigate or sculptured exines. Also the circumscription of *Contignisporites* has been enlarged in this paper to include a diverse variety of forms ranging from proximally laevigate to sculptured exines in varying degree.

INTRODUCTION

THIS paper records some morphographical observations on the genus *Contignisporites* Dettm. Six species belonging to this genus have been observed occurring in the coals of Jabalpur Series (Lower Cretaceous, India) out of which two species, viz. *C. psilatus* sp. nov. and *C. dettmannii* sp. nov. are new. Detailed diagnoses of the new species have been given. *Contignisporites*, as stated by Dettmann (1963) includes trilete miospores which are cingulate and have distal exine beset with a series of bilaterally symmetrical more or less parallel stripes, proximal exine is radially symmetrical and possesses one tangential murus on equatorial regions of each contact face whereas the polar exine may be with or without sculpture. Most of our specimens referable to *Contignisporites* recovered from the Jabalpur Series of India conform to the above characteristics excepting some in which both the equatorial region of each contact face and the interradial polar exine are free from sculpture. Besides, some other specimens exhibit a wide range of transitional features by having incipient, hair-thin, irregularly disposed, muri-like elevations, simulating loose

vermiform pattern which may be localized or distributed all over the proximal face of the central body. Such miospores have been considered intermediate between those which either have proximally laevigate or sculptured exine. Thus *Contignisporites* is intended here to embrace all such diverse forms. The occurrence of *Contignisporites* in the Jabalpur Series has been reported by Singh (1966).

MATERIAL AND METHODS

Coal samples were collected by one of us (SINGH) from the out crops of the Jabalpur Series in the neighbourhood of Sehora and Hathnapur in the district of Narsinghpur, Madhya Pradesh, in March 1962. Methods of collection of the material and maceration have been already given by Singh (1966) and hence are not repeated here.

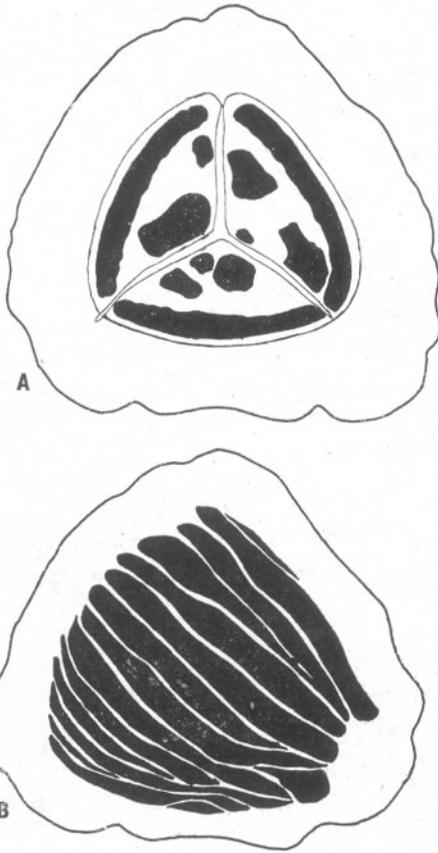
Genus *Contignisporites* Dettmann, 1963

Remarks — *Contignisporites* is understood here to include those forms which even lack the presence of a tangential murus on equatorial region of each contact face. The other characteristics of this genus, as stated by Dettmann (*l.c.*) have been accepted as such.

Contignisporites glebulentus Dettmann, 1963

Pl. 1, Figs. 1-4; Text-fig. 1

Description of our specimens — Miospores more or less $50 \times 55 \mu$ in size, triangular to sub-triangular in equatorial contour having convex sides and weakly rounded corners. Cingulate, cingulum smooth, more or less 2μ thick, $8-11 \mu$ broad, occasionally concentrically striated. Central body triangular more or less $32 \times 35 \mu$, $2-4 \mu$ thick, proximal exine bearing trilete mark, Y-rays straight extending up to inner margin of cingulum, polar and interradial region



TEXT-FIG. 1 — *Contignisporites glebulentus* Dettmann. A, proximal face. B, distal face. \times approx. 1,000.

sculptured with low, broad based ($2-10 \mu$ in diameter, verrucae, equatorial margin of each contact face with one tangentially disposed, $3-4 \mu$ wide and more or less 30μ long murus. Distal exine beset with cicatricose sculpture, bilaterally symmetrical, stripes $8-10$ in number, $3-5 \mu$ broad, bifurcating, rarely anastomosing sometimes coalescing with cingulum at its inner margin, lumina $1-2 \mu$ wide, polar axis lying either at right angles to, or parallel to, the length of the distal stripes.

Remarks — Our specimens of *C. glebulentus* are smaller in size and correspondingly possess lower denomination of other morphographic characters as compared to those which occur in the Australian mioflora. *Appendicisporites cooksonii* (Balme) Pocock figured by Singh (1964, PL. 2, FIGS. 8-10)

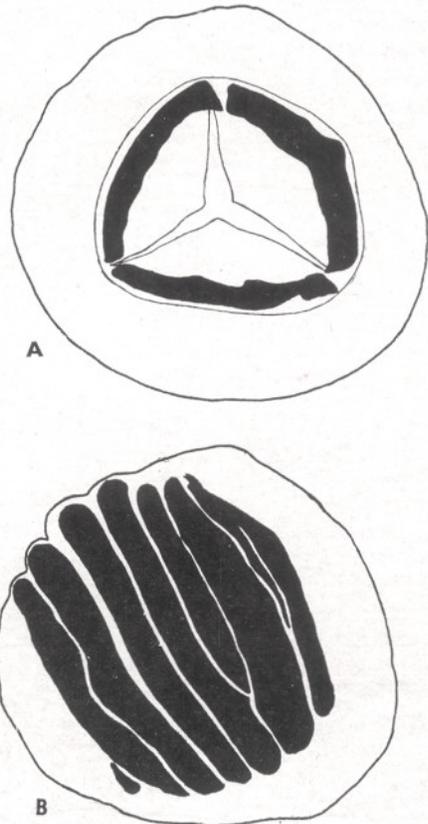
from the Lower Cretaceous of Canada seem to belong to *C. glebulentus*.

Contignisporites cooksonii (Balme) Dettmann, 1963

Pl. 1, Figs. 5-7; Text-fig. 2

Description — See Dettmann, 1963, p. 75.

Remarks — Specimens of *C. cooksonii* have also been figured by Singh *et al.* (1964) from the Umia beds of Cutch, India. These authors have mentioned that the spores figured by Vishnu-Mittre (1954, PL. 1, FIGS. 10, 14-16) from the Nipania cherts in Rajmahal Series, Bihar, India, appear similar to *C. cooksonii* but our restudy shows that they in fact belong to the genus *Cicatricosporites* Pot. & Gell. So there is no authentic record of *Contignisporites* in the Rajmahal Series of India, so far.

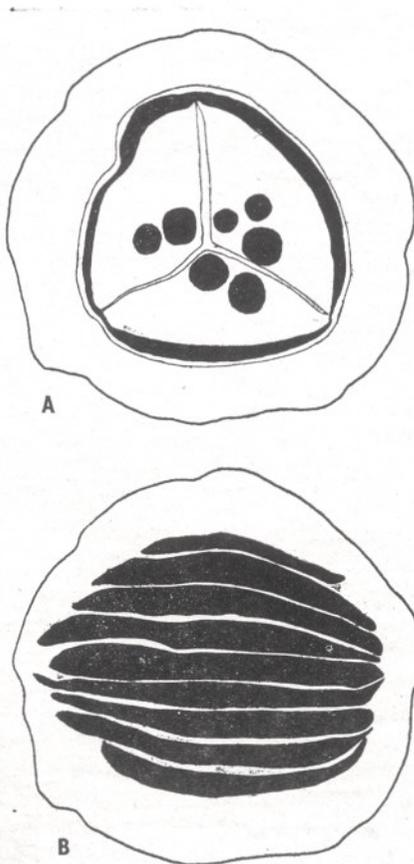


TEXT-FIG. 2 — *Contignisporites cooksonii* (Balme) Dettmann. A, proximal face. B, distal face. \times approx. 1,000.

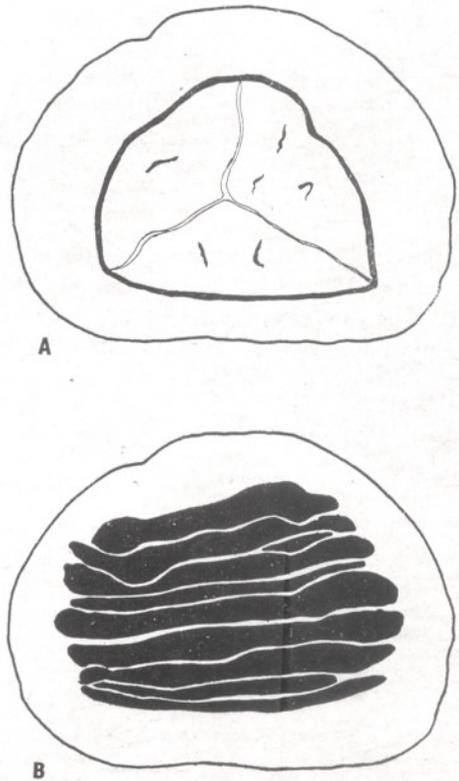
Contignisporites fornicatus Dettmann, 1963

Pl. 1, Figs. 8-11; Text-fig. 3

Description of our Specimens — Miospores more or less $54\ \mu$ in size, usually spheroidal, rarely subtriangular. Cingulate, cingulum smooth, $4-9\ \mu$ wide. Central body spheroidal, $2-3\ \mu$ thick, proximal exine with a weak to distinct Y-mark, Y-rays straight and simple, polar interradiial region sculptured with low, hemispherical — spheroidal verrucae measuring more or less $5\ \mu$ in diameter and variable in number, equatorial margin of each contact face with one tangentially disposed murus, $4-5\ \mu$ broad, more or less $20\ \mu$ long. Distal exine beset with cicatricose sculpture, bilaterally symmetrical stripes, $5-8$ in number, $5-9\ \mu$ wide, lumina



TEXT-FIG. 3 — *Contignisporites fornicatus* Dettmann. A, proximal face. B, distal face. \times approx. 1,000.



TEXT-FIG. 4 — *Contignisporites dettmannii* sp. nov. A, proximal face. B, distal face. \times approx. 1,000.

more or less $2\ \mu$ wide, straight sided, anastomosing and coalescing with the inner margin of cingulum, polar axis usually lying parallel to stripes, rarely perpendicular to it

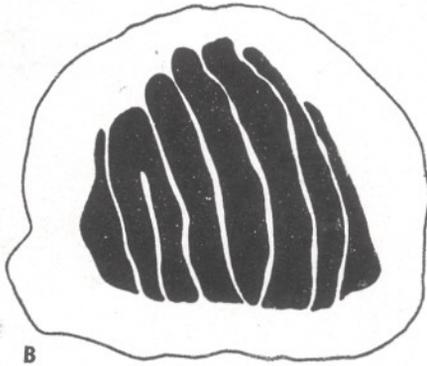
Remarks — In addition to the other morphographic characters like, the number, breadth, disposition of stripes on the distal face of *C. fornicatus*, the presence of hemispherical-spheroidal interradiial polar verrucae on its proximal face has been considered distinctive.

Contignisporites dettmannii sp. nov.

Pl. 1, Figs. 12-17; Text-fig. 4

Holotype — Pl. 1, Figs. 12, 13.

Diagnosis — Miospores subtriangular-subcircular cingulate, central body trilete proximally, exine without sculpture on the equator as well as on the polar interradiial area, sometimes faint, muri-like elevations evident (in some specimens), distal face



TEXT-FIG. 5 — *Contignisporites psilatus* sp. nov. A, proximal face. B, distal face. \times approx. 1,000.

bearing 7-9 bifurcating or anastomosing stripes with rounded edges.

Description—Miospores subtriangular-subcircular, 44×59 - $50 \times 56 \mu$ in size, usually having convex sides and weakly rounded corners. Cingulate, cingulum smooth 7 - 12μ wide. Central body usually subtriangular $20 \times 34 \mu$ - $38 \times 40 \mu$, 2μ thick, proximal face usually bearing faint but discernible trilete mark, Y-rays extending up to the equator of the central body, simple, polar interradiol exine as well as the equatorial margin of the each contact face without any sculpture, some specimens exhibiting faint, incipient, muri-like elevations either localized or sparsely distributed all over the proximal face of the central body, appearing vermiform in surface view (PL. 1, FIG. 15). Distal exine sculptured with 2 - 4μ wide, 7 - 9 stripes in number with rounded edges bifurcating or anastomosing occasionally coalescing with inner margin of the cingulum, lumina 1 - 2μ wide. Disposition of stripes with respect

to the polar axis either at right angles to, or parallel to it.

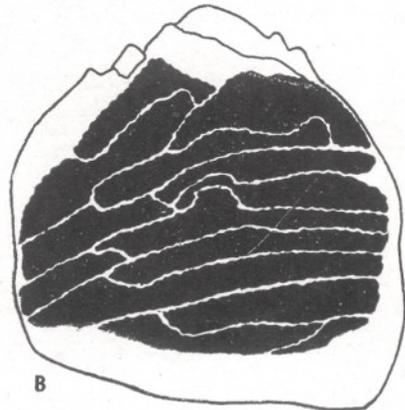
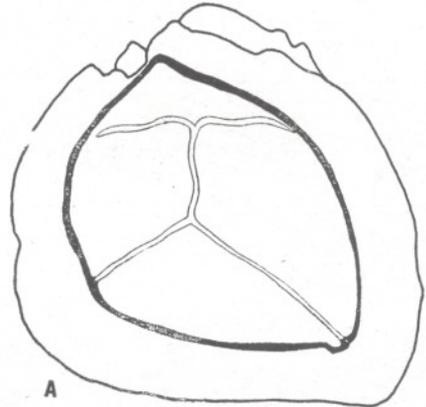
Comparison—The chief characteristics of *C. deltmannii* which separate it from the other species are the absence of equatorial interradiol murus on each contact face and sculpture on its polar proximal face. However, some incipient muri-like elevations on the proximal face of the central body in some specimens are noteworthy.

Contignisporites psilatus sp. nov.

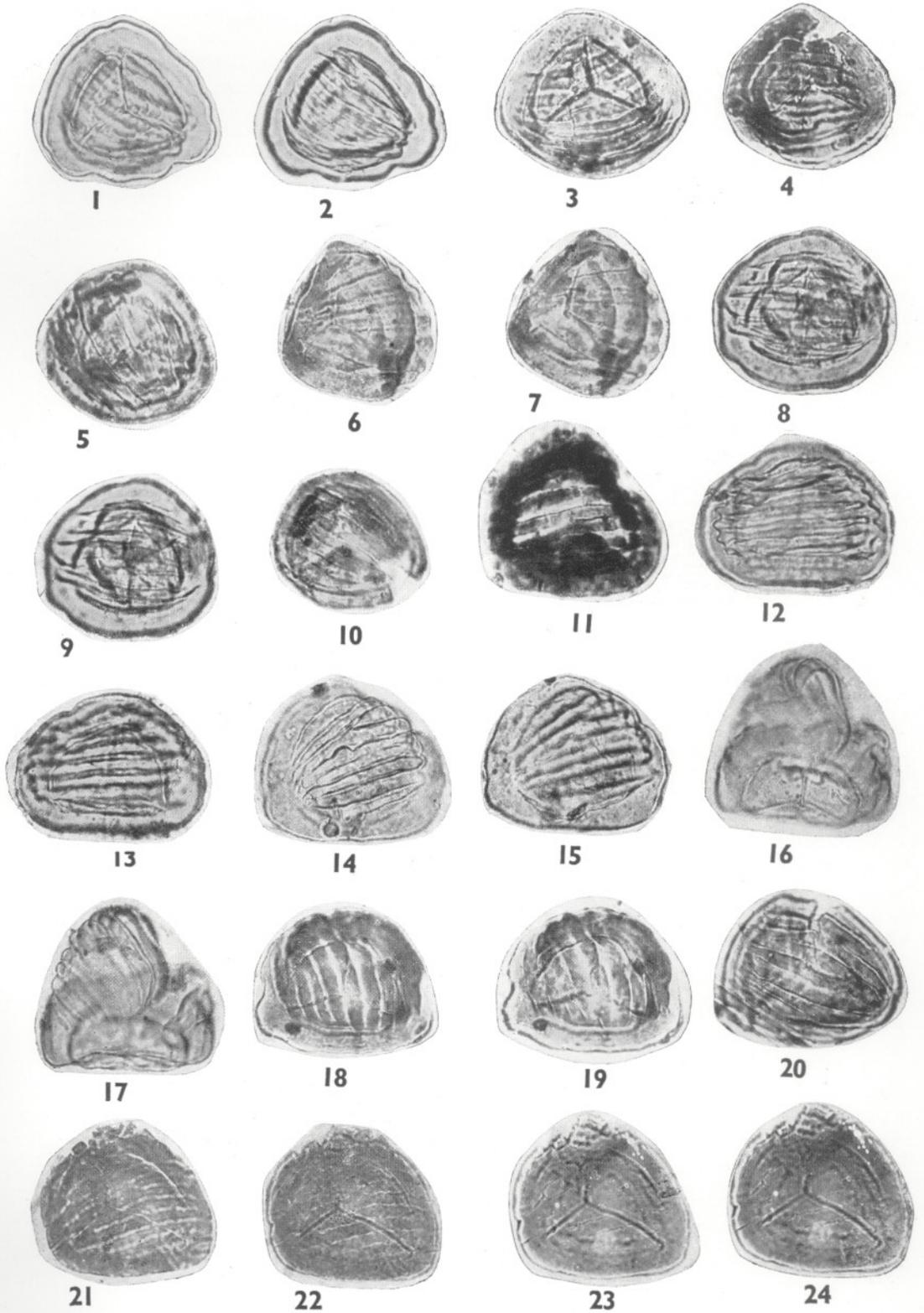
Pl. 1, Figs. 18-20; Text-fig. 5

Holotype—Pl. 1, Figs. 18,19.

Diagnosis—Miospores subtriangular-subcircular, cingulate, central body 3 - 4μ thick at the equator, trilete proximally, exine absolutely smooth, distal exine bearing



TEXT-FIG. 6 — *Contignisporites* sp. A, proximal face. B, distal face. \times approx. 1,000.



about 8 bilateral, convergent, simple stripes with flat edges.

Description — Miospores more or less $45 \times 50 \mu$ in size, subtriangular-subcircular in equatorial contour having straight-weakly convex sides, cingulate, cingulum $1-2 \mu$ thick, $5-8 \mu$ broad uniformly or unequally. Central body subtriangular more or less $30 \times 37 \mu$ in diameter, $3-4 \mu$ thick uniformly at the equator, proximal exine bearing trilete mark, Y-rays thick, distinct, extending up to the equatorial margin of the central body but not joining the inner margin of the central body, polar interradiation region as well as equatorial margin of each contact face free from sculpture. Distal exine ornamented with cicatricose sculpture, bilaterally symmetrical stripes usually flat, 8 in number, 4μ wide, neither bifurcating nor anastomosing, usually converging, lumina 2μ wide, width of four adjacent stripes and lumina 18μ , interradiation polar axis lying either at right angles to, or parallel to the distal stripes.

Comparison — Other species of *Contignisporites* differ from *C. psilatus* sp. nov. in having either tangential murus on the equatorial interradiation region of each contact face or verrucae-like sculpture on or near polar exine area. *C. dettmannii* is closely similar to *C. psilatus* but differs from the latter in possessing thinner central body, fainter Y-mark, bifurcating or anastomosing

distal stripes with rounded edges and comparatively broader cingulum.

Contignisporites sp.

Pl. 1, Figs. 21-24; Text-fig. 6

Description — Miospores about $52 \times 54 \mu$, subtriangular having convex sides. Cingulate, cingulum about 6μ wide uniformly, more or less 2μ thick and smooth. Central body $36 \times 39 \mu$, subtriangular, proximally distinct Y-mark present, Y-rays thin extending up to the equatorial margin of the central body, one ray-arm bifurcating near the equatorial margin, incipient tangential murus about $5 \times 30 \mu$ present in each contact face near the equator of the central body, polar exine absolutely free from sculpture. Distal face ornamented with cicatricose, bilateral 8 stripes usually bifurcating rarely anastomosing tending to be convergent on one side, sinuous, closely spaced, 4μ wide, lumina less than 1μ in width, lying either perpendicular to or parallel to the polar axis.

Comparison — The figured specimen of *C. sp.* is the only record from this assemblage. It appears to differ from other species of *Contignisporites* by virtue of its incipient tangential murus in each contact face near the equator of the central body and sinuous outline of the distal stripes.

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EXPLANATION OF PLATE

(All figures are from unretouched negatives and are $\times 500$)

PLATE 1

- 1-4. *Contignisporites glebulentus* Dettmann. Ph. Nos. 264/3, 4, 260/7, 261/22.
5-7. *C. cooksonii* (Balme) Dettmann. Ph. Nos. 262/11, 262/4, 5.
8-11. *C. fornicatus* Dettmann. Ph. Nos. 264/6,

- 7, 262/28, 262/13.
12-17. *C. dettmannii* sp. nov. Ph. Nos. 264/21, 20, 264/13, 14, 265/33, 32.
18-20. *C. psilatus* sp. nov. Ph. Nos. 261/10, 11, 261/18.
21-24. *C. sp.* Ph. Nos. 265/10, 265/17, 261/32, 31.