STUDIES IN THE GLOSSOPTERIS FLORA OF INDIA— 37. FURTHER CONTRIBUTION TO THE MIOSPORE ASSEMBLAGE OF THE COAL-BEARNING BEDS OF THE UMARIA COALFIELD, MADHYA PRADESH

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ABSTRACT

15 species of miospores belonging to twelve genera are described from the shales of the coal-bearing beds of the Umaria Coalfield. The evidences of miospores further substantiates the fact that the coal-bearing beds are homotaxial to the Karharbari Stage of the Giridih Coalfield.

INTRODUCTION

THE miospores from the coal-bearing beds of the Umaria Coalfield were described by Maithy (1966). Some more shale samples from the collection of the New Umaria Colliery, Umaria Coalfield were macerated recently. A study of these preparation revealed the presence of several miospores in addition to those earlier recorded. The same new records are described here.

DESCRIPTION

For the taxonomic treatment of the miospore assemblage the system proposed by Potonié (1956, 1958) and by Bharadwaj (1962) has been followed.

Anteturma — *Sporites* H. Pot.
Turma — *Triletes* (Reinsch) Pot. & Kr.
Subturma — *Azonotriletes* Luber
Infraturma — *Laevigati* (Benn. & Kidt.) Pot.

Genus *Granulatisporites* (Ibr.) Pot. & Kr. 1954

Species recorded here:

1. *Granulatisporites* sp. (Pl. 1, Fig. 1).

Few grains in the assemblage. Size 110-130 μ. Outline distinctly circular, exine covered with grana. Y-mark distinct, extending ± 1/2 body diameter. The grains may be irregularly folded.

Genus *Horriditriletes* Bharadwaj & Salujha, 1964

Species recorded here:

1. cf. *Horriditriletes* sp. (Pl. 1, Fig. 2).

Few grains in the assemblage, size 90-110 μ. Outline ± circular, exine covered with closely spaced baccula; baccula are big with truncate apex. No mark is perceptible.

Turma — *Zonales* (Benn. & Kidst.) Pot.
Subturma — *Zonotriletes* Waltz.
Infraturma — *Cingulati* Pot. & Kl.

Genus *Dentatispora* Tiwari, 1964

Species recorded here:

1. *Dentatispora gondwanensis* Tiwari, 1965 (Pl. 1, Figs. 3, 4).

Anteturma — *Pollenites* R. Pot.
Turma — *Saccites* Erdtman
Subturma — *Monosaccites* (Chitaley) Pot. & Kr.
Infraturma — *Apertacorpiti* Lele

Genus *Pilicatipollenites* Lele, 1964

Species recorded here:

1. *Plicatipollenites trigonalis* Lele, 1964 (Pl. 1, Fig. 7).
2. *Plicatipollenites diffusus* Lele, 1964 (Pl. 1, Figs. 5, 6).
3. *Plicatipollenites gondwanensis* Lele, 1964 (Pl. 1, Fig. 8).

Genus *Virkkipollenites* Lele, 1964

Species recorded here:

1. *Virkkipollenites densus* Lele, 1964 (Pl. 1, Fig. 9).

Infraturma — *Parasacciti* Maheshwari

Genus *Parasaccites* Bharadwaj & Tiwari, 1964

Species recorded here:

1. *Parasaccites korbaensis* Bharadwaj & Tiwari, 1964 (Pl. 1, Fig. 10).
2. *Parasaccites bilateralis* Tiwari, 1965 (Pl. 1, Fig. 11).

Infraturma — *Amphisacciti* Lele

Genus *Crucisaccites* Lele & Maithy, 1964

Species recorded here:

1. *Crucisaccites latisulcatus* Lele & Maithy, 1964 (Pl. 1, Fig. 12).

Genus *Vesicaspora* (Schemel) Wilson & Venkatachala, 1964

Species recorded here:

1. *Vesicaspora* sp. (Pl. 1, Fig. 17).

Few grains in the assemblage. Size 150-180 μ × 80-120 μ. Body oval on the terminal sides, exine intramicroreticulate, mark or striation absent. Saccus attachment subequatorial both on the proximal and distal side of the body, lateral continuation very narrow, saccus exine intramicroreticulate. Saccus free body area is fairly wide.

Infraturma — *Vesiculomonoraditi* (Pant) Bharadwaj

Genus *Sahnites* Pant, 1955

Species recorded here:

1. *Sahnites gondwanensis* (Mehta) Pant, 1955 (Pl. 1, Figs. 13-15).

Remarks — Bharadwaj (1964) emended the generic diagnosis of *Potonieisporites* in the light of the evidences laid by the *in situ* spores from the cones of *Lebachia*, *Ernstiodendron* and *Walchia* and concluded that the dispersae spore genera *Sahnites* Pant (1955) and *Vestigisporites* Balme & Hennelly (1955) to be synonymous to *Potonieisporites*. In the present assemblage comparable grains to that of the *Sahnites* were recorded. A critical examination of them reveals that the grains are organizationally different from that of *Potonieisporites* Bharadwaj. They support the original organizational concept of the Pant (1955), i.e., the saccus attachment at the para position (subequatorial on both the sides of the body). The grains from the coal-bearing beds of Umaria are 140-180 μ ± 70-100 μ, oval in outline, body ± circular, distinct, exine intramicroreticulate, a distinct monolete mark is occasionally present occupying ± 1/2 of the body diameter. Saccus dilated laterally and constricted at two vertical ends, attachment subequatorial on both the sides of body, ± conforming to the body outline on the proximal side and vertically oval on the distal side. The distal zone of saccus attachment associated with two distinct body folds. Saccus exine intrareticulate, muri and lumina of equal width. The grains are organizationally similar to *Sahnites gondwanensis* (Mehta) Pant (1955). Owing to the para condition of the saccus attachment the grains are comparable to *Parasaccites* Bharadwaj & Tiwari (1964) but the former is distinguished by the presence of body folds, saccus attachment subequatorial, circular on the proximal side and vertically oval on the distal side and monolete mark.

Genus *Vestigisporites* Balme & Hennelly

Species recorded here:

1. *Vestigisporites densus* Singh, 1964 (Pl. 1, Fig. 16).

Remarks — The grains from the coal-bearing beds of the Umaria Coalfield are organizationally similar to those of *V. densus* Singh (1964, PL. 46, FIGS. 2, 3) from the Permian of Iraq. Bharadwaj (1964) considered *Vestigisporites* synonymous to *Potonieisporites* Bhard. on basis of the study of Palaeozoic conifer cones. In the same cone he noticed grains with fold components and without folds. Since in the present assemblage no transitional forms were recorded, in between the grains with folds and without folds. Therefore, it is preferred here to retain on grounds of morphology *Vestigisporites* separate from *Potonieisporites*.

Subturma — *Disaccites* Cookson
Infraturma — *Striatiti* Pant

Genus *Lunatisporites* (Lesch.) Bharadwaj, 1962

Species recorded here:

1. *Lunatisporites amplus* (Balme & Hennelly) Potonié, 1958, (Pl. 1, Fig. 18).

Infraturma — *Podocarpoiditi* Pot., Thomas & Thierg.

Genus *Cuneatisporites* Leschik, 1955

Species recorded here:

1. *Cuneatisporites* sp. (Pl. 1, Fig. 19).

Size range 80-110 μ, diploxylonoid, body distincly circular, thick, dense brown in colour, exine intramicroreticulate, mark or striations absent. Sacci sub-spherical twice bigger than the body, saccus attachment striaght, distal zone of saccus free area wide,

saccus exine intrareticulate, muri and lumina are of equal width. Only few grains in the assemblage, therefore, a detailed comparison was not possible.

DISCUSSION

Our knowledge of the miospore assemblage of the coal-bearing beds of Umaria Coalfield was confined to 15 genera and 18 species. The present records brings the number to 20 genera and 34 species. Earlier Maithy (1966) on the basis of the plants and miospore evidences supported the view of Pascoe (1959) that the beds are homotaxial with the Karharbari Stage of the Giridih Coalfield. The present records of miospores further supports this fact. The miospore assemblage of the coal-bearing beds agree closely to the Giridih Coalfield, however, the flora of the Umaria differs by the presence of the characteristic element *Stellapollenites* of the Talchirs and the Barakar element *Dentatispora*. These elements are so far unknown from the Karharbari beds of the Giridih Coalfield. The occurrence of these two genera supports the fact that the flora of the coal-bearing beds is an admixture of the Talchir and the Barakar elements. However, in the assemblage the Talchir elements show a dominance and the incoming of the Barakar elements are noticed in addition to the presence of typical Karharbari elements of its own.

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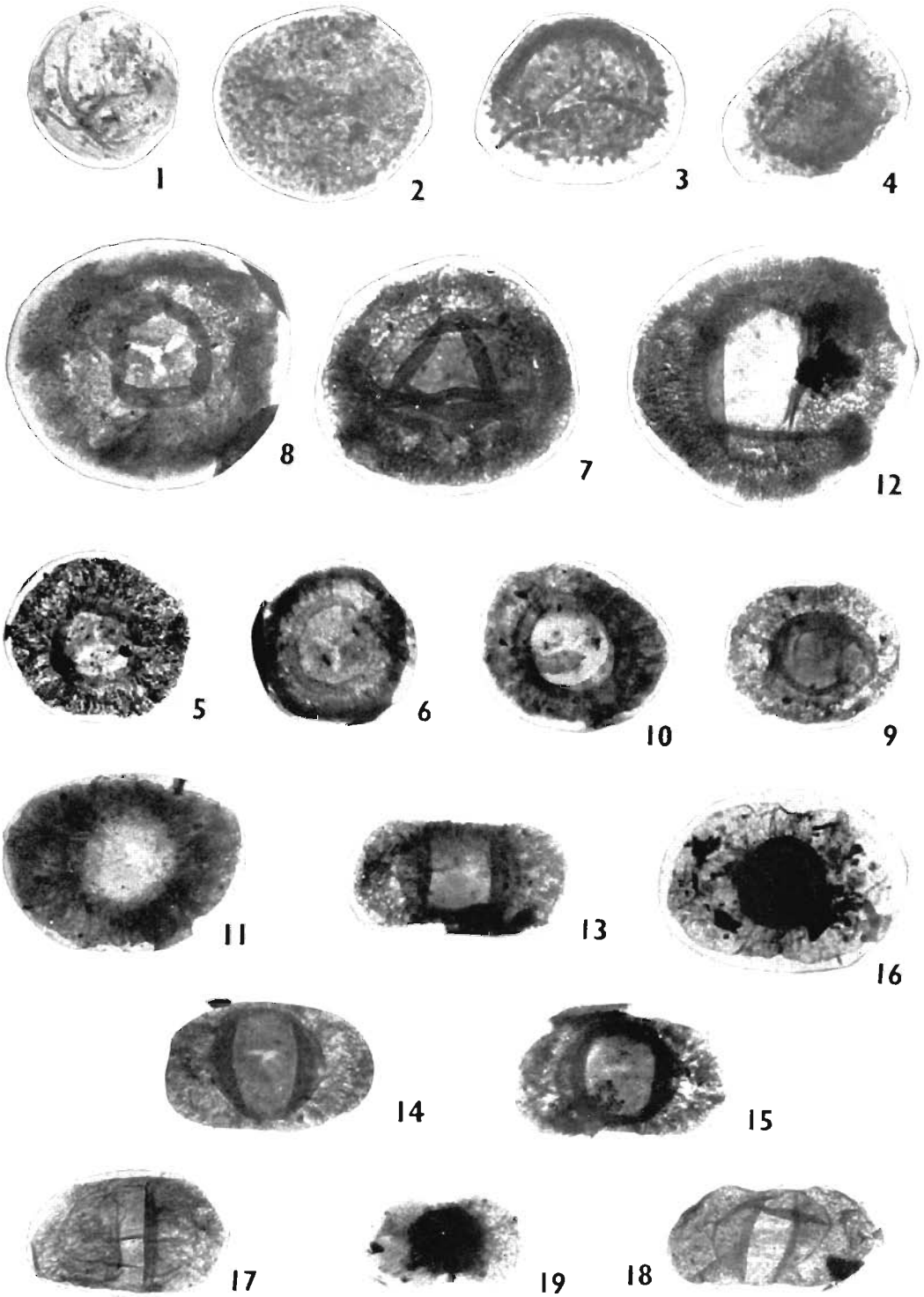
EXPLANATION OF PLATE

Plate 1

(Slides preserved at the Museum of the Birbal Sahni Institute of Palaeobotany, Lucknow).

1. *Granulatisporites* sp. × 500, Slide No. 2799.
2. cf. *Horriditriletes* sp. × 500. Slide No. 2798.
3, 4. *Dentatispora gondwanensis* Tiwari. × 500. Slide No. 2798, 2799.
5, 6. *Plicatipollenites diffusus* Lele, × 250. Slide No. 2799.
7. *Plicatipollenites triagonalis* Lele, × 250. Slide No. 2799.
8. *Plicatipollenites gondwanensis* Lele, × 250 Slide No. 2798.
9. *Virkkipollenites densus* Lele. × 250. Slide No. 2798.
10. *Parasaccites korbaensis* Bhard. & Tiwari. × 250. Slide No. 2799.
11. *Parasaccites bilateralis* Tiwari. × 250. Slide No. 2799.
12. *Crucisaccites latisulcatus* Lele & Maithy, × 250. Slide No. 2798.
13-15. *Sahnites gondwanensis* Pant. × 250. Slide No. 2798, 2799.
16. *Vestigisporites densus* Singh. × 250. Slide No. 2798.
17. *Vesicaspora* sp. × 250. Slide No. 2799.
18. *Lunatisporites amplus* Bal. & Henn. × 250. Slide No. 2799.
19. *Cuneatisporites* sp. × 250. Slide No. 2798.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