

SPORAE DISPERSAE FROM CARBONACEOUS SHALE IN BARJORA, BANKURA DISTRICT, INDIA

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Abstract

The paper describes 18 genera belonging to 20 species of *spora dispersae* from a carbonaceous shale occurring at a depth 35.9 m in bore-core no. 1 in Barjora, West Bengal. These are: *Cyclogranisporites*, *Lophotriletes*, *Cyclobaculisporites*, *Psilalacinites*, *Laevigatosporites*, *Bharadwajapollis*, *Densipollenites*, *Striomonosaccites*, *Striatites*, *Verticipollenites*, *Crescentipollenites*, *Gondwanipollentites*, *Faunipollenites*, *Scheuringipollenites*, *Polysaccus*, *Striasulcites* and *Gondwanaraplicates*. *Polysaccus* is a new taxon described here. The dominance of *Laevigatosporites* in association with *Striasulcites* and *Scheuringipollenites* in the assemblage indicates that the assemblage belongs to Upper Barakar mioflora. The bore-core comprises sandstone at the top followed by carbonaceous shale, sandy shale, ferruginous sandstone, coal and micaceous shale.

Introduction

The occurrence of Lower Gondwana sedimentary deposits in Bankura District has been recorded by Geological Survey of India (Rec. G. S. I.). These deposits occur in North and North-Eastern area of the district adjacent to Damodar River. The geological formation in the district shows the following :

Recent—Alluvium

Pleistocene—Recent—Laterite

Oligocene Miocene—Sandstone, gravel conglomerate

Permian (Lower Gondwana) Sandstone, and shale

Archaean—Dolerite

Pegmatite, aplite and pink granite,

gneiss and various composite gneiss and schist

Anorthosite

Hornblende-gneiss and schist epidiorite,

amphibolite, pyroxene-granulite and talc-

chlorite—tremolite rock

Quartzite and dolomitic limestone

The Lower Gondwana Formation consists of sandstones, micaceous shale, ferruginous sandstone, sandy shale, carbonaceous shale and coal in varying amount and thickness in different parts in the southern region of the district adjacent to the Damodar River.

Numerous workers have contributed to our knowledge of miofloristics of the Indian Lower Gondwana formations. A review of literature shows that hitherto Navale and Srivastava (1970) and Bhattacharyya (1982; Ph. D. Thesis) worked on this formation. Both these investigations are in Mejia and Ardhagram areas.

Sporae Dispersae

Spores and pollen grains present in the carbonaceous shale of Barjora, Bankura District have been listed below :

- Cyclogranisporites gondwanensis* Bharadwaj & Salujha, 1964 (Pl. 1, fig. 1)
Lophotriletes rectus Bharadwaj & Salujha, 1964 (Pl. 1, fig. 2)
Horriditriletes curvibaculosus Bharadwaj & Salujha, 1964 (Pl. 1, fig. 3)
Cyclobaculisporites indicus Bharadwaj & Salujha, 1964 (Pl. 1, fig. 4)
Psilalacinites triangulus Kar, 1969 (Pl. 1, fig. 5)
Laevigatosporites colliensis (Balme & Hennelly) Venkatachala & Kar, 1968 (Pl. 1, fig. 6)
Bharadwajipollis striatus Kar, 1969 (Pl. 1, fig. 7)
Densipollenites indicus Bharadwaj & Salujha, 1964 (Pl. 1, fig. 8)
D. invisus Bharadwaj & Salujha, 1964 (Pl. 1, fig. 9)
Striomonosaccites ovatus Bharadwaj, 1962 (Pl. 1, fig. 10)
Striatites communis Bharadwaj & Salujha, 1964 (Pl. 1, fig. 11)
Verticypollenites gibbosus Bharadwaj, 1962 (Pl. 1, fig. 12)
Crescentipollenites fuscus (Bharadwaj) Bharadwaj *et al.* (Pl. 2, fig. 13)
Gondwanipollenites magnificus (Bharadwaj & Salujha, 1964) Bose & Maheshwari, 1968 (Pl. 2, fig. 14)
Faunipollenites various Bharadwaj, 1962 (Pl. 2, fig. 15)
Scheuringipollenites maximum (Hart) Tiwari, 1973 (Pl. 2, fig. 16)
S. tentulus (Tiwari) Tiwari, 1973 (Pl. 2, fig. 17)
Polysaccus striatus gen. et sp. nov. (Pl. 2, fig. 18)
Striasulcites ovatus Venkatachala & Kar, 1968 (Pl. 2, figs. 19, 20)
Gondwanaeplicates bhardwajii Kar, 1969 (Pl. 2, fig. 21)

Genus—*POLYSACCUS* gen. nov.

Genotype—*Polysaccus striatus*

Pl. 2, fig. 18

Generic Diagnosis—Polysaccate pollen grain; number of saccus 4-6; central body well defined, subcircular, finely microreticulate, horizontally striated with vertical connections; sacci unequal in shape and size, coarsely intrareticulate.

Description—Polysaccate pollen grains; size range 48.5×54.0 — 70.0×75.5 μm , central body of the pollen grains mostly subcircular, size range $38.0 \times 43.0 \times 59.5$ μm , microreticulate, horizontally striated, striations 4-6, horizontal with occasional vertical connections. Number of sacci 4-6 which are not equal in shape and size, coarsely intrareticulate.

Comparison—*Trochosporites* Wilson, 1962 is also a polysaccate grain but differs from *Polysaccus* in the absence of striations in the former genus. *Trochosporites* is trisaccate but *Polysaccus* having 4-6 sacci.

Polysaccus striatus gen. et sp. nov.

Pl. 2, fig. 18

Holotype—Pl. 2, fig. 18; size— 48.5×65 μm ; central body— 38×43 μm ; Slide no. 136/5.

Type Locality—Bore-hole 1, sample no. 260, depth 35.9 m, carbonaceous shale, Barjora, Bankura District, West Bengal.

Specific Diagnosis—Multisaccate grains, body with striations. Body with fine reticulations and wings are with intrareticulations.

Description—Size range $48.5 \times 48.5 \times 54.0$ — $70.0 \times 75.5 \mu\text{m}$, body with horizontal striations with occasional vertical connections, size range of central body— 38.0×43.0 — $54.0 \times 59.5 \mu\text{m}$, finely reticulate. Wings 4-6, coarsely intrareticulate.

Discussion

The present sample contains 18 genera and 20 species of *sporae dispersae*. The assemblage includes striated and non-striated disaccate, monosaccate, polysaccate, trilete and monolete spores and plicate grains. Among these, the monolete *Laevigatosporites* is the most dominant genus whose frequency of occurrence is 24 per cent followed by *Striasulcites* (14.5%). The bisaccate grain *Scheuringipollenites* has 13.5 per cent representation in the assemblage. Among the trilete grains, *Lophotriletes* (9.5%) and *Horriditriletes* (6.5%) is sub-dominant. The presence of *Striasulcites* (14.5%) and *Bharadwajipollis* (5%) in the assemblage indicates that it belongs to upper part of Barakar Formation of Rajmahal Basin.

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Explanation of Plates

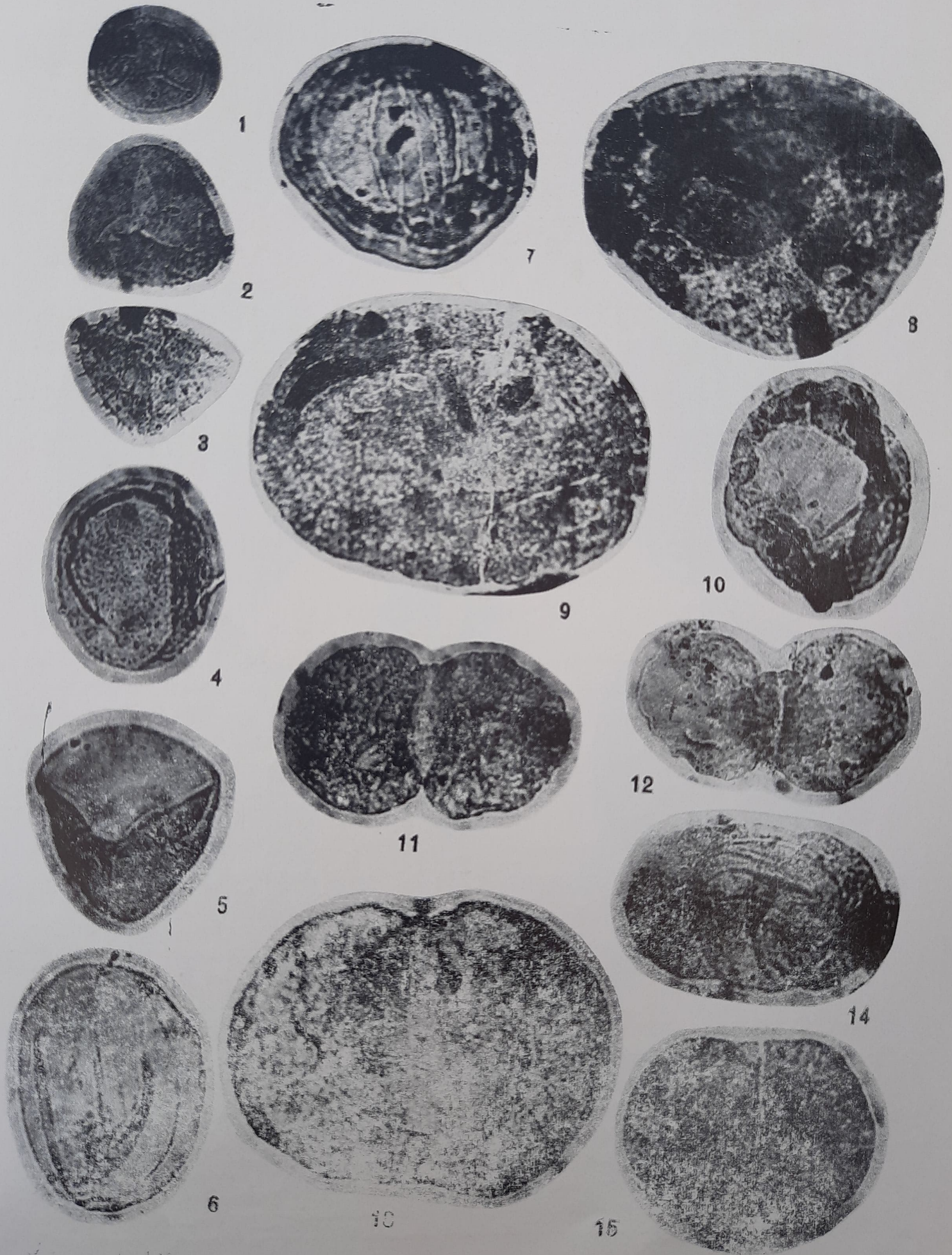
Plate 1

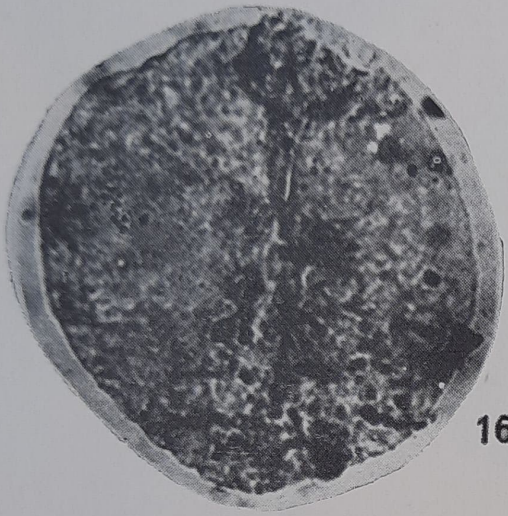
(All figures $\times 500$)

1. *Cyclogranisporites gondwanensis*, slide no. 34/9
2. *Lophotriletes rectus*, slide no. 33/31.
3. *Horriditriletes rectus*, slide no. 130/16.
4. *Cyclobaculisporites indicus*, slide no. 130/2.
5. *Psilalacinites triangulus*, slide no. 128/49.
6. *Laevigatosporites colliensis*, slide no. 128/49.
7. *Bharadwajipollis striatus*, slide no. 128/26.
8. *Densipollenites indicus*, slide no. 36/3.
9. *Densipollenites invisus*, slide no. 36/28.
10. *Striomonosaccites ovatus*, slide no. 130/1.
11. *Striatites communis*, slide no. 130/11.
12. *Verticypollenites gibbosus*, slide no. 136/11.

Plate 2

13. *Crescentipollenites fuscus*, slide no. 128/50.
14. *Gondwanipollenites magnificus*, slide no 38/23.
15. *Faunipollenites various*, slide no. 36/26.
16. *Scheuringipollenites maximus*, slide no. 130/42.
17. *Scheuringipollenites tentulus*, slide no. 36/14.
18. *Polysaccus striatus*, slide no. 136/5.
- 19, 20. *Striasulcites ovatus*, slide no. 130/27.
21. *Gondwanaeplicates bharadwajii*, slide no. 130/42.





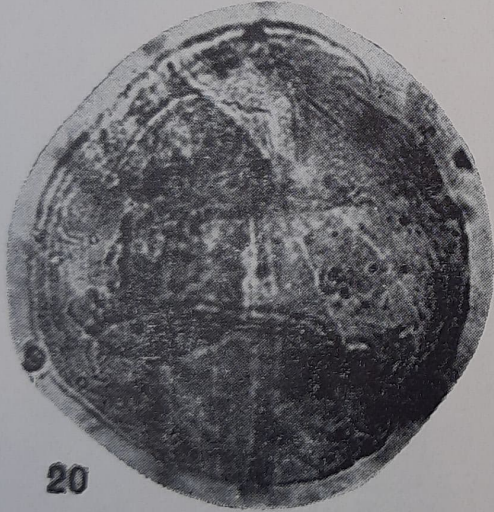
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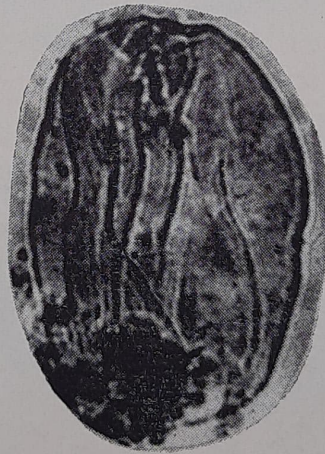
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19



20



21



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