

Late Barakar flora from the Chaturdhara *Nala* section, Ib-River Coalfield, Sundargarh, Orissa, India

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ABSTRACT

Meena KL 1999. Late Barakar flora from the Chaturdhara *Nala* section from Ib-River Coalfield, Sundargarh, Orissa, India. Palaeobotanist 48(2) : 141-145.

The Chaturdhara *Nala* section is located in the north-western side of Gopalpur Village, Sundargarh District, Orissa. The surface palynological investigation found the samples collected from Chaturdhara *Nala* section near to junction of Basundhara *Nala* section. In the present occurrence *Famipollenites* and *Striatopodocarpites* prominence and followed by *Rhizomaspora*, *Scheuringipollenites*, *Distriatites*, *Cyclogranisporites*, *Cyclobaulisporites*, *Densipollenites*, *Striatites* and *Alisporites* etc. On the basis of palynoassemblage it is suggested that these sediments were deposited in the Late Barakar age. The similar palynoassemblage is found in earlier study of bore-hole number IBH-6 from this area. The dominance of striated disaccate taxa followed by non striated disaccate spores in present study hence, the present palynoassemblage is equal to Late Barakar age of other basins, India.

Key-words—Palynology, Palynodating, Chaturdhara *Nala*, Ib-River Coalfield, Sundargarh, Orissa, Son-Mahanadi Graben, (India).

सारांश

भारत के उड़ीसा प्रान्त के सुन्दरगढ़ अवस्थित ईब-नदी कोयलाक्षेत्र के चतुर्धारा नाला परिच्छेद से प्राप्त अंतिम बराकारयुगीन वनस्पतिजात किन्डु लाल मीणा

चतुर्धारा नाला परिच्छेद उड़ीसा के सुन्दरगढ़ जनपद के गोपालपुर नामक ग्राम के उत्तर-पश्चिमी छोर पर स्थित है। वसुन्धरा नाला परिच्छेद के निकटवर्ती संयोजन से एकत्र सतह के प्रादर्श का परागाणविक अन्वेषण किया गया। इन प्रादर्शों में फॉनिपोलेनाइटीज़ तथा स्ट्राइटोपोडोकारपाइटीज़ और इनके अनुवर्ती राइजोमासपोरा, श्युरिंगीपोलेनाइटीज़, डिस्ट्रायटाइटीज़, साइक्लोबौलोसपोराइटीज़, साइक्लोबौलोसपोराइटीज़, डेन्सिपोलेनाइटीज़, स्ट्रायटाइटीज़ तथा एलिस्पोराइटीज़ इत्यादि की प्रधानता है। परागाणविक समुच्चय के आधार पर इन अवसादों का अन्तिम बराकार युग में निक्षेपित होना प्रस्तावित किया गया है। इसी क्षेत्र के छिद्र संख्या आई.वी.एच.-6 के अध्ययन में भी इसी प्रकार के परागाणविक समुच्चय प्राप्त हुए हैं। चूंकि वर्तमान अध्ययन से रेखित वर्गकों तथा इनके अनुवर्ती अरेखित सपुट वीजाणुओं की प्रधानता लक्षित हुयी है, अतः वर्तमान परागाणविक समुच्चय भारत की अन्य द्रोणियों के अंतिम बराकार युग के समतुल्य है।

INTRODUCTION

THE general geological succession in Ib-River Coalfield, Son-Mahanadi Basin, India exhibits the presence of Barakar Formation overlain by the Kamthi Formation (Raja Rao, 1982). The Lower part of Kamthi Formation deposited in Late Raniganj period (Meena, 1997). The Barren Measures Formation is not demarcated. Hence the dating and correlation is necessary in this basin with this object I have studied bore hole IBH-6 from Sundargarh district and IBSH-6 from Belpahar area, Jharrugnda district, Orissa. The palynological report from this area suggests that Raniganj Formation overlies Barakar Formation. The palynological report from the Belpahar area, Ib-River Coalfield is almost non existant except a brief report (Maiti, 1994) and studied two bore-hole myself earlier.

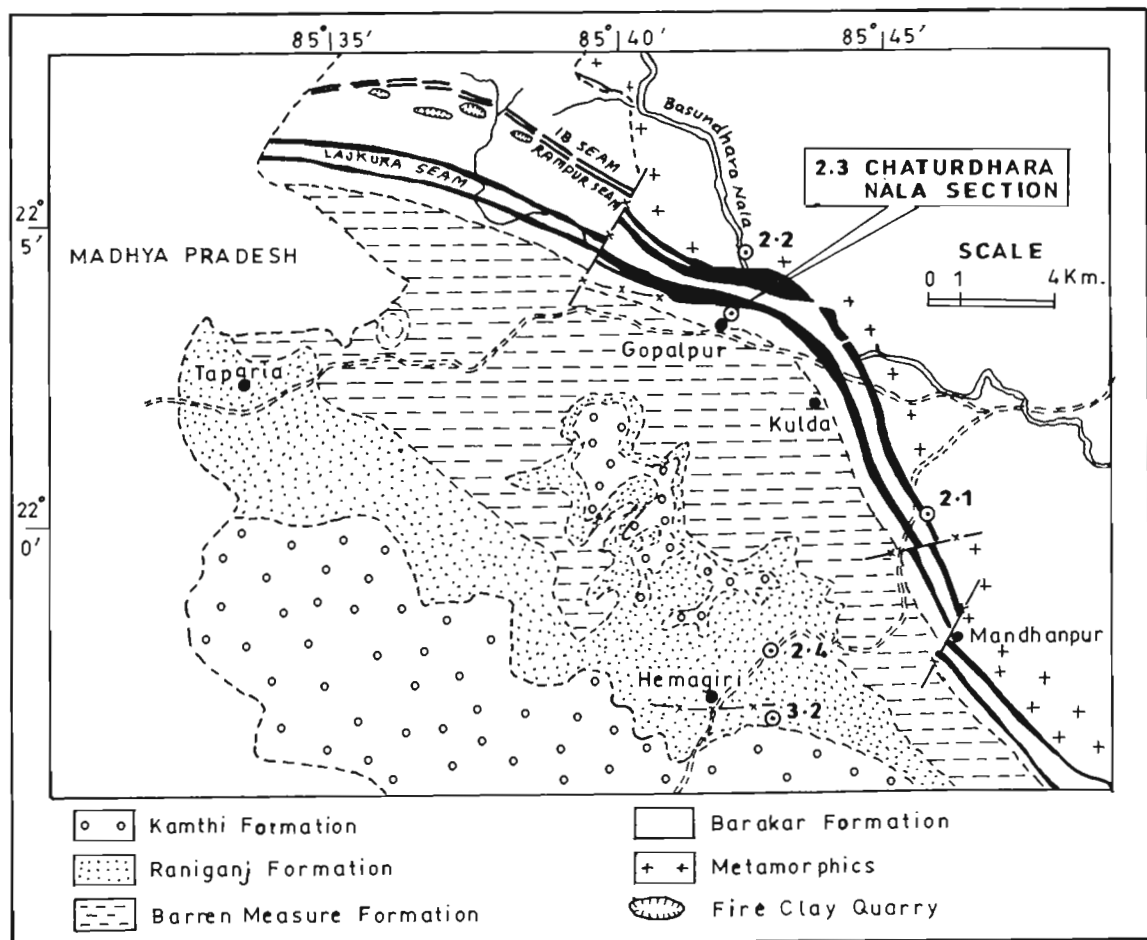
MATERIAL AND METHOD

I have collected surface samples from Chaturdhara Nala section near the half km of Basundhara Nala Junction and

processed the samples with HCl, HF and HNO_3 . I have found four samples which contained rich palynoflora for the palynological study. The material was collected from Chaturdhara Nala section near to Junction of Basundhara Nala Location Text-figure 1.

PALYNOLOGICAL ASSEMBLAGE

The quantitative floral composition has been determined after count 200 specimens from each samples. A perusal of Text-figure 2 reveals the assemblages has the dominance of the genus *Faunipollenites* and sub dominance *Striatopodocarpites* with significant association of the genera are *Rhizomaspora*, *Distriatites*, *Scheuringipollenites*, *Cyclogranisporites*, *Cyclobaculisporites*, *Densipollenites striatites*, *Alisporites*, etc. The lack of younger elements as *Lundbladispora*, *Densoisporites*, *Densipollenites magnicarpous*, *Lunatisporites*, etc. Hence the palynological investigation suggests the age of strata comparable to Upper Barakar.



Text-figure 1—Showing the location map of Chaturdhara Nala section, Sundargarh district, Ib-river Coalfield, Orissa.

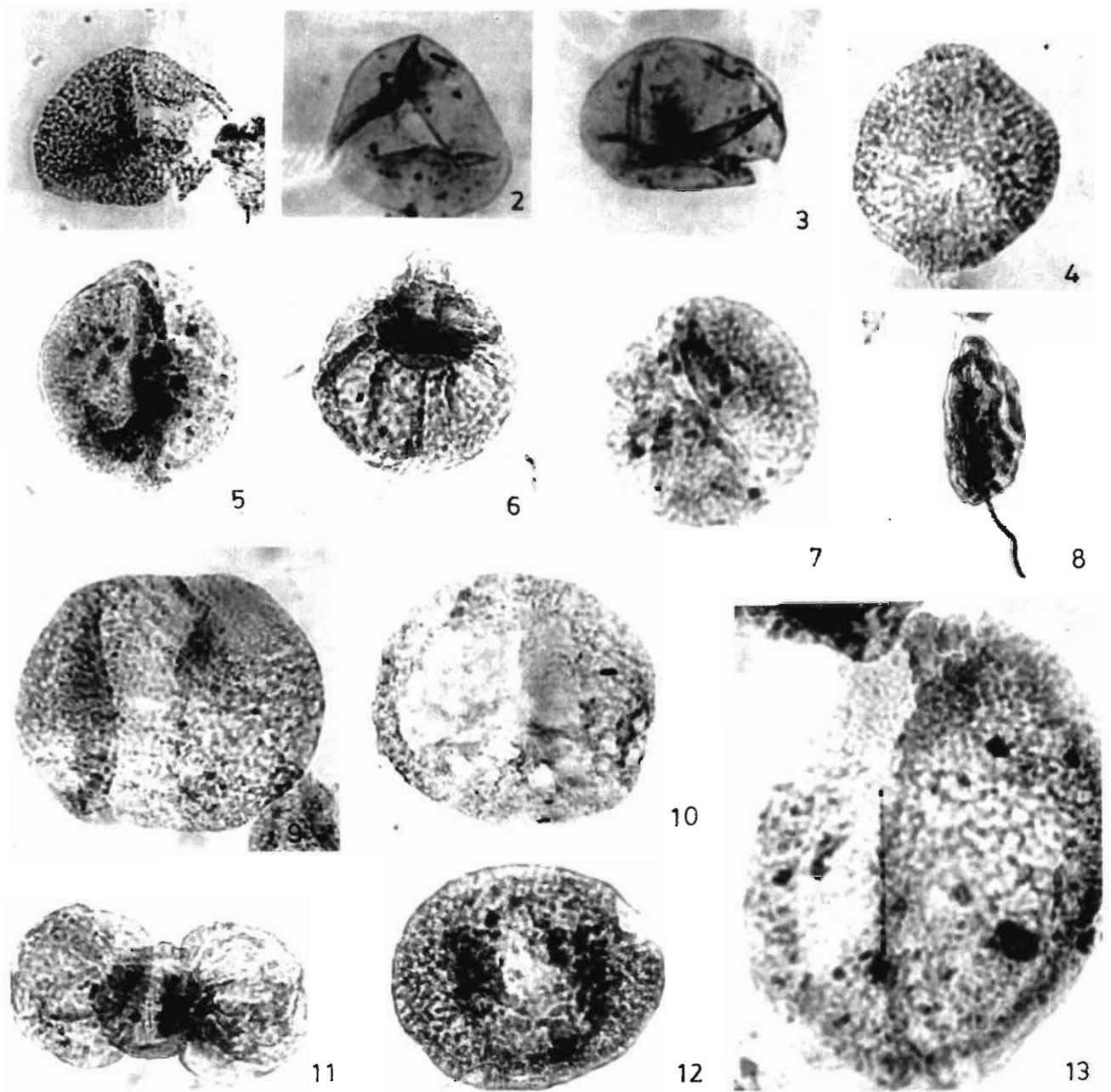
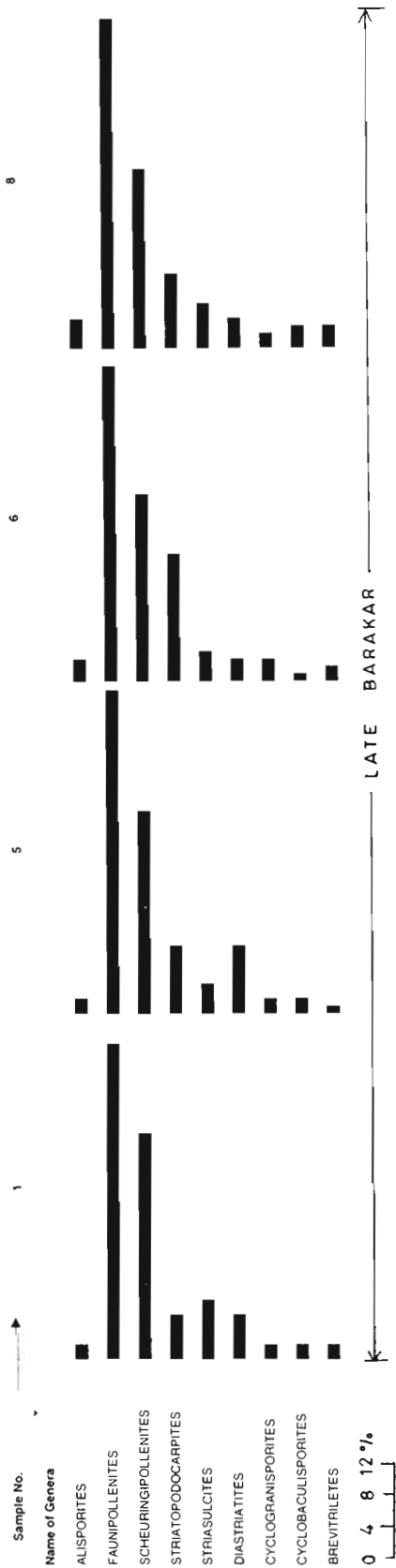


PLATE 1

(All x 500)

1. *Microbaculispora gondwanensis*. Bharadwaj, 1962. BSIP Slide No. 12091
2. *Latosporites falkenvergensis*. Venkatachala & Bharadwaj, 1964. BSIP Slide No. 12091
3. *Inaperturopollenites nebulosus*. Balme, 1970. BSIP Slide No. 12091
- 4, 12. *Cyclobaculisporites minutus*. Bharadwaj & Salujha, 1964. BSIP Slide No. 12090.
5. *Scheuringipollenites maximus*. (Hart) Singh, 1964. Tiwari, 1973. BSIP Slide No. 12091
6. *Densipollenites indicus*. Bharadwaj, 1962. BSIP Slide No. 12091
- 7, 10. *Faunipollenites perexigus*. Bharadwaj & Salujha, 1965. BSIP Slide No. 12090.
8. *Ephedripites mesozoica*. Maheshwari, Bose & Kumaran, 1977. BSIP Slide No. 12091
9. *Striatites irregularis*. Tiwari, 1965. BSIP Slide No. 12090.
11. *Rhizomaspora indica*. Tiwari, 1965. BSIP Slide No. 12091
13. *Parasaccites bilateralis*. Tiwari, 1965. BSIP Slide No. 12090.



Age	Group	Formation	Lithology & Thickness.
Recent		Alluvium/ Laterite	Recent gravel and conglomerate.
Upper Permian to Lower Triassic	Lower Gondwana	Kamthi	Conglomerate, red shale, ferruginous sandstone (300 m).
Lower Permian	Lower Gondwana	Barakar	Feldspathic with conglomerate bands and lenses, white, grey and carbonaceous shales fireclay and coal seams (600 m).
		Karharbari	Mostly coarse grained sandstone with one thin coal seam (90 m-125 m).
		Talchir	Diamictite greenish sandstones, olive and chocolate coloured needle shales bands, rhythmites (130 m+).
Unconformity			
Pre-Cambrian			Granite, Gneisses, Cambrian Amphibolites, Migmatites etc.

Based on the work carried out by the earlier workers, the following geological succession for Ib-Hingir Valley was proposed (after Raja Rao, ed, 1982):

Table 1—The sample list of studied surface sediments from Chaturdhara Nala section near to Junction of Basundhara Nala, District Sundargarh.

Sl. No.	Lithology	Remark	Lithological age	Palynological age
1.	Grey shale	++		
2.	—do—	-		U
3.	—do—	-		
4.	—do—	-		P
5.	—do—	++	B	
6.	—do—	++	A	P
7.	—do—	-	R	
8.	—do—	+++	A	E P
9.	—do—	-	K	A
10.	—do—	-	A	R L
11.	—do—	-	R	Y
12.	—do—	-		N
13.	—do—	-		O
14.	—do—	+		B
15.	—do—	-		A
16.	—do—	-		A S
17.	—do—	+		S
18.	—do—	-		R E
19.	—do—	-	F	M
20.	—do—	-	O	A B
21.	—do—	-	R	L
22.	—do—	+	M	K A
23.	—do—	-	A	G
24.	—do—	-	T	A E
25.	—do—	-	I	
26.	—do—	-	O	R
27.	—do—	-	N	
28.	—do—	+		
29.	—do—	-		
30.	—do—	-		

+ rare ++ common +++ rich - absent

Text-figure 2—Histogram showing the percentage distribution of palynotaxa in surface samples from Chaturdhara Nala section Ib-River Coalfield, district Sundargarh, Orissa.

CORRELATION

The Upper Barakar palynoflora recovered from the surface samples were collected from northern side of Chaturdhara *nala* near to junction of Basundhara *nala*. This palynoassemblage resemble with the results of B.H. IBH-6 K.L. Meena (*in press*) from IB-River Coalfield, Jhalesuguda, Orissa. The results correlate with the result of B.H. TP-8 studied by Tripathi (1996) and also with results of B.H. TP-9 and TP-10 studied by Meena (*in press*) from Talchir coalfield, Orissa. This palynoassemblage has resemble with Upper Barakar age (Lower Permian) recovered from B.H. RGP-7 studied from Mand-Raigarh Coalfield, M.P. by Meena (1999). The results of there surface sediments has been correlate with the other basins of India (Bharadwaj, 1962; Bharadwaj & Tiwari, 1977; Tiwari & Singh, 1986; Srivastava, 1973, 1980; Srivastava & Anand-Prakash, 1984; Tiwari & Meena 1989).

CONCLUSION

Palynological results suggest that these sediments were deposited in Late Barakar age. The palynoassemblage is similar to palynological results recovered from Upper Barakar sediments of other basins, India.

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