

Palynodating of subsurface sediments of bore-hole IBH-6 in Ib-River Coalfield, Orissa, India

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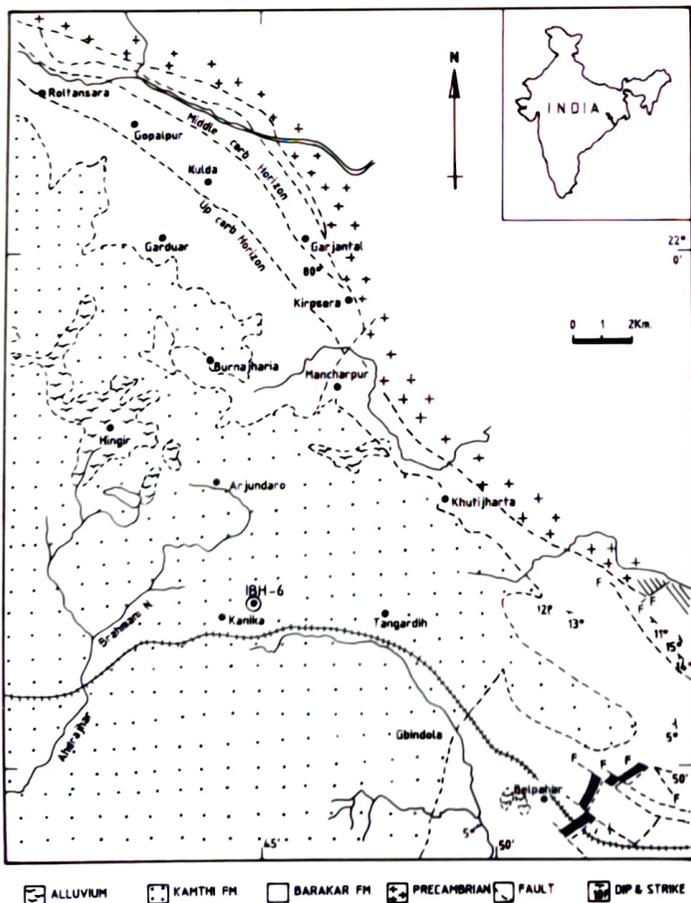
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IN the general geological succession of Ib-River Coalfield, Son-Mahanadi basin the Barakar Formation overlies the Kamthi Formation (Raja Rao 1982), thus the presence of Barren Measures Formation was not demarcated and also the Raniganj Formation is not clearly defined.

The palynology of the subsurface sediments from the Belpahar area was done by Meena (1998) through a bore-hole IBSH-6 drilled near Gopalpur Village. The present core (bore-hole IBH-6) was drilled (Map-1) nearly one kilometer north of Hemagiri railway station in district Jharsuguda (Orissa).

The Belpahar area is generally marked by the cover of Kamthi Formation and the average thickness runs upto 300m. The present bore-hole was drilled at a place where Kamthi sediments are exposed within a small nala. This bore-hole runs through Raniganj, Barren Measures and Barakar Formations (Fig. 1).



Map 1. Showing the location of the bore-hole IBH-6 in Ib-River Coalfield.

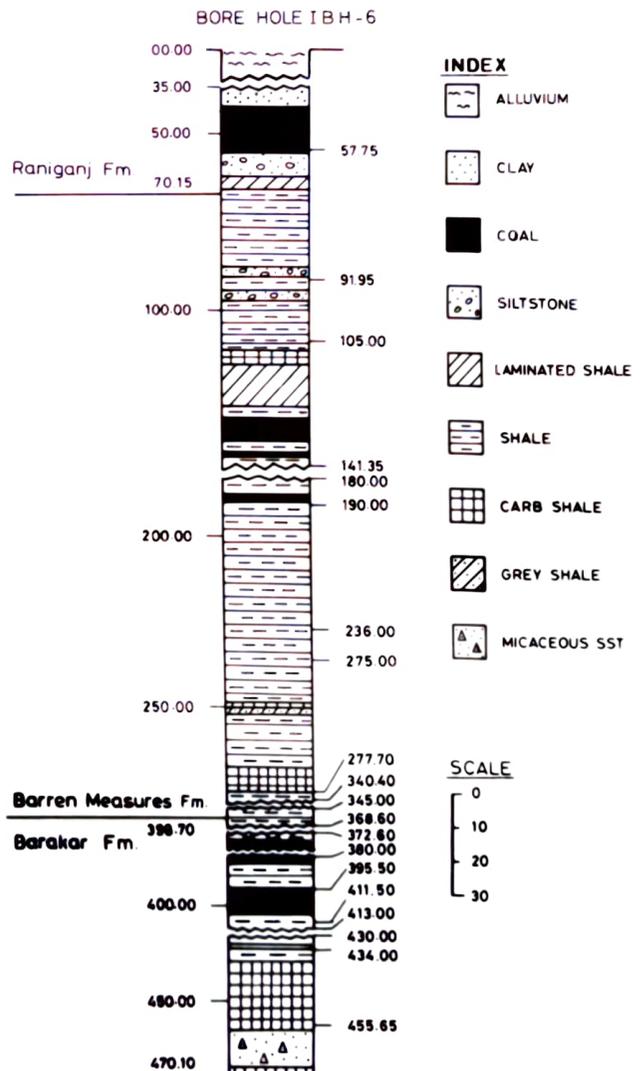
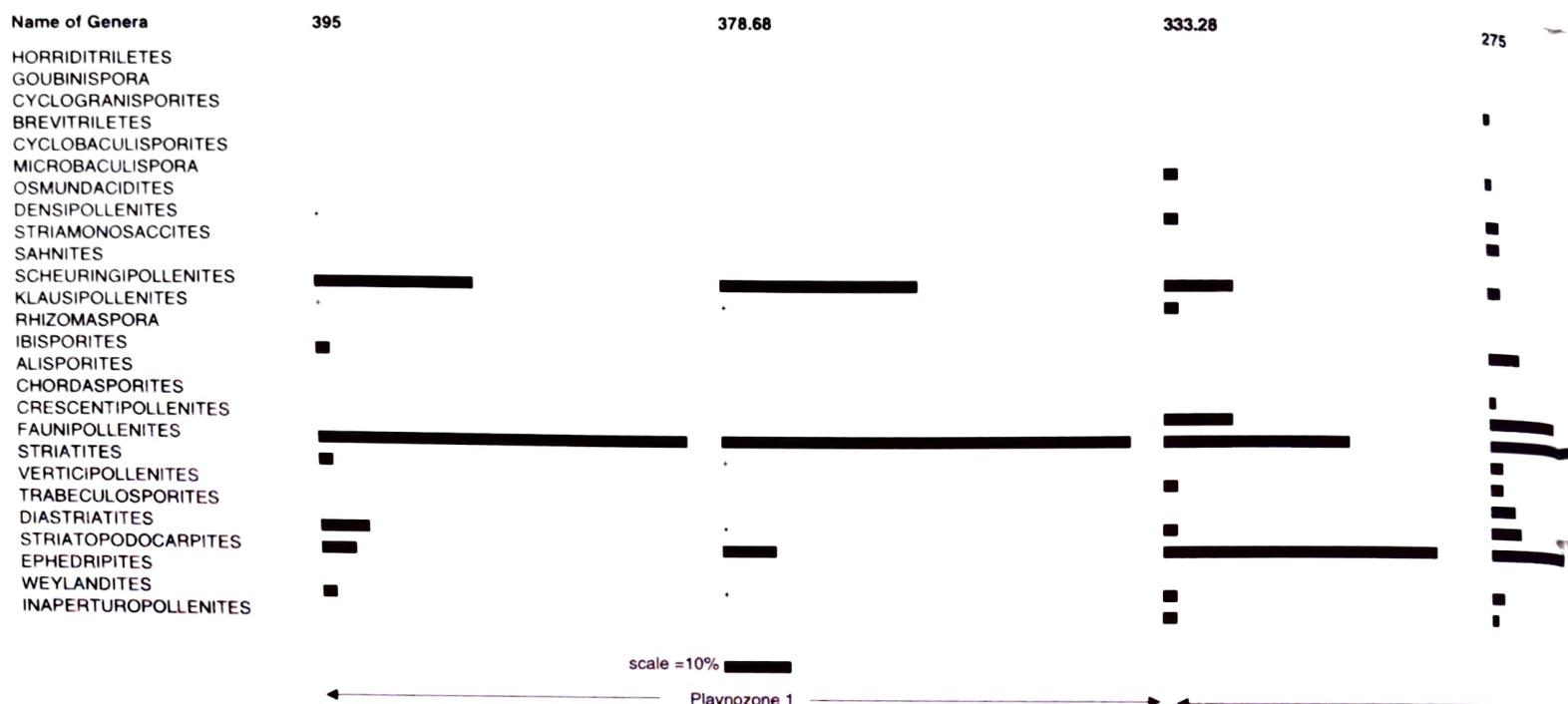


Fig. 1. Lithological succession of bore-hole IBH-6 in Ib-River Coalfield and lithological boundaries.



Histogram 1. Percentage of palynotaxa in bore-hole IBH-6 in Ib-River Coalfield.

Palynological Assemblages

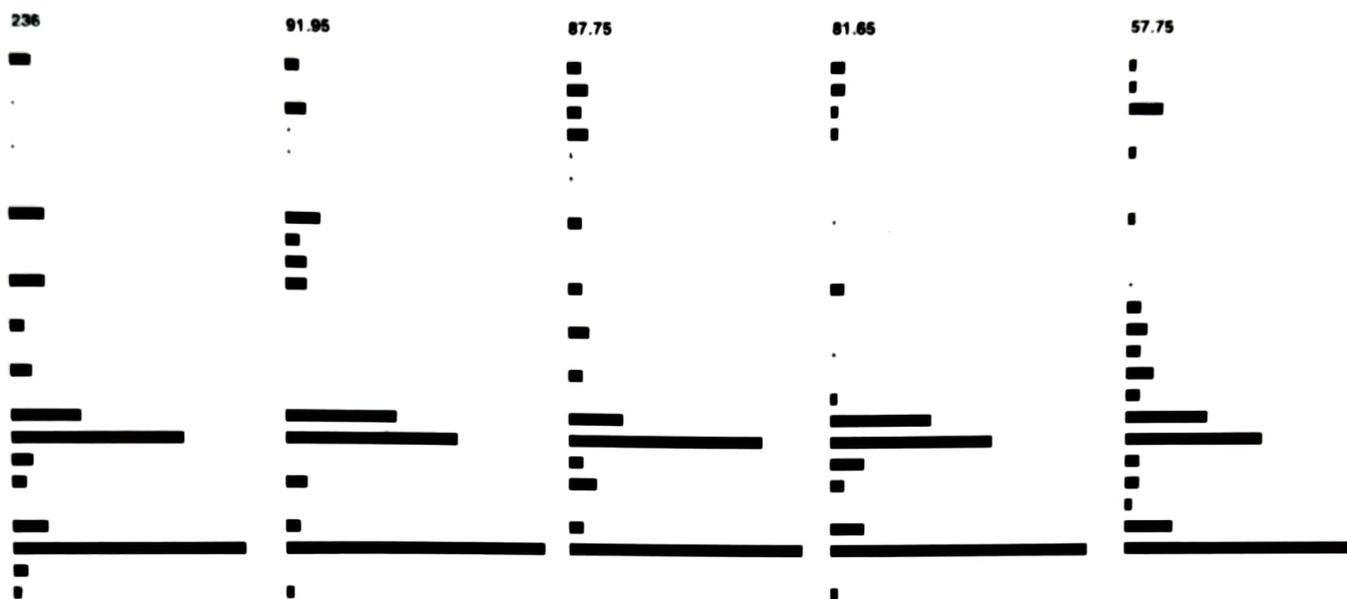
Out of 120 samples collected from bore-hole IBH-6, 26 samples yielded the palynomorphs (Histogram-1). The quantitative composition of the assemblages have been determined after counting 200 specimens from each sample.

A perusal of Histogram-1 reveals the presence of two assemblages: The oldest assemblage between 395.00m to 335.00m (Palynozone-1) reveals the prominence of the genera (*Faunipollenites* and *Scheuringipollenites* with significant *Striatopodocarpites*, *Distriatites*, *Striatites*, and *Weylandites*). The younger assemblage (Palynozone-2) between 332.40m to 57.75 has the dominance of *Striatopodocarpites* followed by *Faunipollenites*, *Crescentipollenites* and *Distriatites*. The presence of the *Verticipollenites*, *Densipollenites magnicarpus* and *Striatites*, in low percentages is significant. The appearances of *Goubinispora*, *Trabeculosporites*, *Klausipollentites*, *Chordasporites* and *Falcisporites* in the younger sediments also render a younger aspect to Palynozone 2.

The bore-hole IBH-6, lithologically runs through Raniganj, Barren Measures and Barakar Formations. However, the above palynological analysis suggest the

presence of *Faunipollenites varius* Assemblage-zone (Tiwari & Tripathi 1992) representing the Upper Barakar palynozone between 395-335.00m (Palynozone-1). The palynozone-2 is (57.75m to 332.40m) is comparable to R-IA of Damodar Basin (Tiwari & Singh 1986) representing Raniganj palynoassemblage. The upper miofloral assemblage zone demarcated by Maiti (1994) from Sundergarh District, Orissa (bore-hole IBH-16) is similar to the Palynozone-2 identified here, indicating Late Permian affinity. The present palynozone also correlates to the palynozone described from bore-hole IBSH-6 from Belpahar Area (Meena, 1998).

The prominence of *Densipollenites magnicarpus* and *Crescentipollenites fuscus* correlates the present Palynozone-2 to *Densipollenites magnicarpus* Assemblage- Zone (Tiwari & Tripathi 1992) and *Striatopodocarpites-Crescentipollenites* Zone-D of Tiwari and Tripathi (1988). The *Striatopodocarpites - Crescentipollenites* assemblage represents the top-most palynozone in the Bazargaon Area near Nagpur (Srivastava & Bhattacharyya, 1996) and underlies the Lower Kamthi palynozone (Early Triassic). In view of above the Palynozone-2 of the present investigation represents the youngest Raniganj palynozone in bore-hole IBH-6. Thus, the lithologically differentiated Bar-



Playnozone 2 →

ren Measures Formation palynologically correlates to the youngest part of Raniganj Formation. There appears to be complete absence of Barren Measures Formation in the stratigraphic succession of the bore-hole IBH-6 investigated here.

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