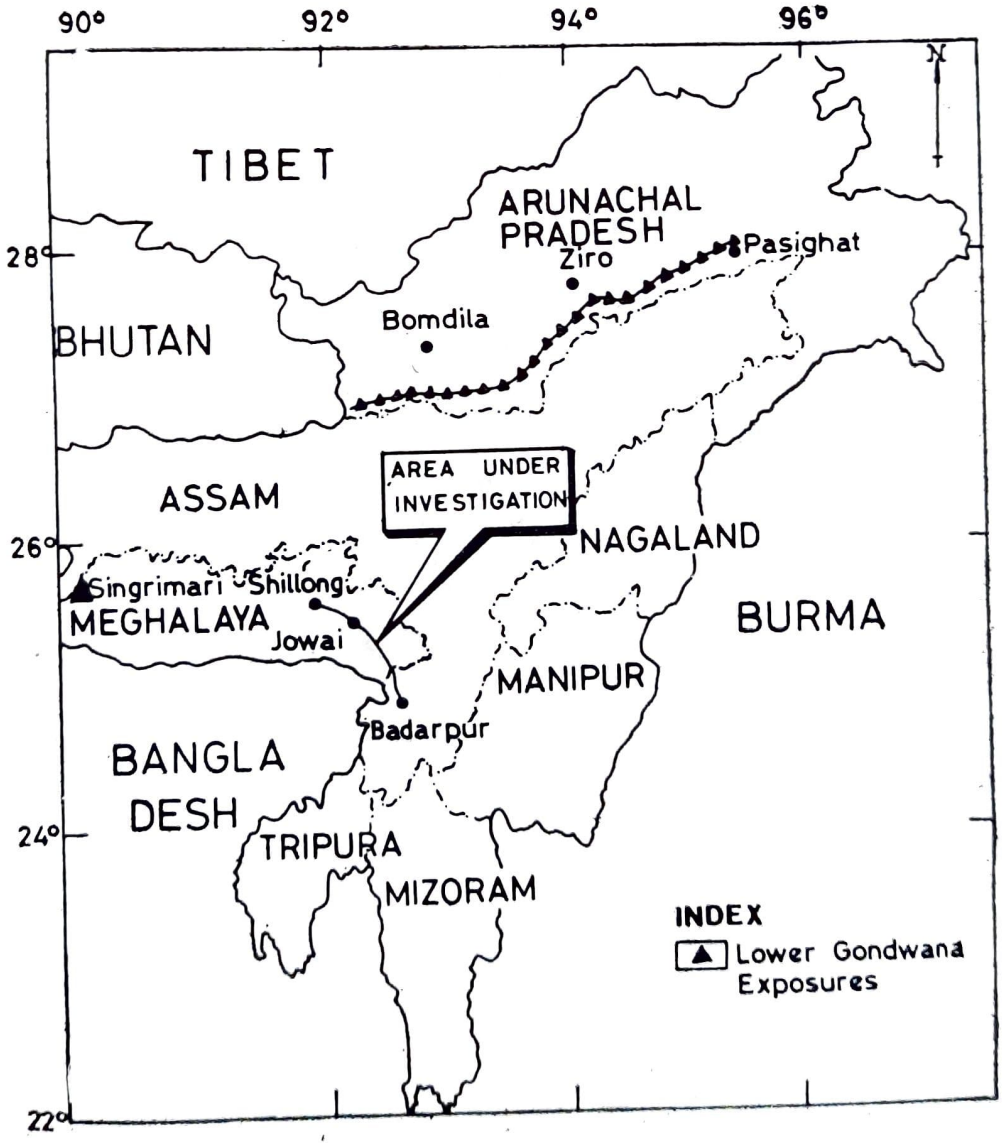
REWORKED GONDWANA PALYNOFOSSILS FROM THE KOPILI FORMATION (LATE EOCENE) OF JAINTIA HILLS, MEGHALAYA

Recycling of palynofossils of older age in the Tertiary sediments of north eastern India has been reported by Banerjee *et al.* (1973), Salujha *et al.* (1973), Sah (1974), Dutta (1978, 1979), Dutta and Banerjee (1979), Trivedi (1985) and Sharma *et al.* (1986). Trivedi (1985) recorded the occurrence of recycled Gondwana palynofossils, viz., *Podosporites tripakshi*, *Indotriradites* sp. etc., from the Kopili Formation exposed along Jowai-Badarpur Road section (National Highway No. 44), Meghalaya. While studying the palynoflora of the Kopili Formation (Late Eocene) from the same road section in Jaintia Hills, Meghalaya the author found reworked Permian, Triassic and Early Cretaceous palynofossils.

The studied section is located at 136 km. post from Shillong, along Jowai-Badarpur Road Section near Lumshnong, Jaintia Hills, Meghalaya (Map 1). The recycled palynofossils are as follows:



Map 1

Permian palynofossils

Indotriradites sp. (Pl. 1, fig. 3).
Calamospora aplata Bharadwaj & Salujha 1964
Cannanoropollis medius Potonić & Sah 1965
Callumispora sp.
Parasaccites distinctus Tiwari 1965
Rhizomaspora costa Venkatachala & Kar 1968
Cuneatisporites rarus Kar 1968 (Pl. 1, fig. 4)
Horriditriletes sp. (Pl. 1, fig. 8)
Platysaccus ovatus Maithy 1965

Triassic palynofossils

Falcisporites sp. (Pl. 1, fig. 2)
Lundbladispora sp. (Pl. 1, fig. 4)
Lunatisporites sp. (Pl. 1, fig. 5)
Klausipollenites sulcatus Kar, Keiser & Jain 1972

Early Cretaceous palynofossils

Klukisporites variegatus Couper 1958
Densoisporites velatus Weyland & Krieger 1952 (Pl. 1, fig. 12).
Densoisporites mesozoicus Singh, Srivastava & Roy 1964
Podosporites tripakshi Rao. 1943
Callialasporites segmentatus (Balme) Dev 1961 (Pl. 1, fig. 5)
C. trilobatus (Balme) Dev 1961 (Pl. 1, figs. 10. 11)
Araucariacites australis Cookson (1947) (Pl. 1, fig. 9)
Contignisporites sp.
Polycingulatisporites sp.

Quantitative analysis of the above palynofossils revealed that *Cuneatisporites rarus* Kar 1968 and *Klausipollenites sulcatus* Kar *et al.* 1972 are dominant among the Permian and Triassic forms respectively while *Callialasporites trilobatus* (Balme) Dev 1961, *Densoisporites mesozoicus* Singh, Srivastava & Roy 1964 and *Araucariacites australis* Cookson 1947 are among Early Cretaceous forms.

A small patch of Lower Gondwana deposit is exposed at Singrimari (89°53′ 30″ E: 25°38′ 38′ N) in north west part of Garo Hills, Meghalaya; about 300 kms (at present) north west of the area under investigation (Map 1). This could be the source area for the Permian palynofossils. (Dutta, 1979).

Reworked palynofossils of Permian have so far been recorded from Assam, Meghalaya and Bangladesh (Dutta & Banerjee, 1979). However, Sharma *et al.* (1986) recorded both Permian and Lower Cretaceous palynofossils from Barpathar well No. 1 of Upper Assam. The present study records the occurrence of Triassic and Lower Cretaceous palynomorphs from the surface samples in Meghalaya for the first time which indicates that these sediments also existed alongwith the Lower Gondwana sediments. According to Ramanujam and Prabhakar (1986), *Callialasporites*, *Araucariacites*, *Podosporites* and *Polycingulatisporites* are stratigraphically significant palynotaxa and are reliable markers for Lower Cretaceous (Neocomian-Aptian) sediments of south India. Therefore the present reworked Gondwana palynofossils have been assigned to Permian, Lower Triassic and Early Cretaceous age respectively.

The recycling of the Gondwana palynofossils in the present context may be related with the orogeny of Himalayas. According to Valdiya (1984) the second upheaval of deformation in the evolution of Himalayas took place during Late Eocene-Oligocene. The Gondwana sediments also probably underwent deformation during the evolution of Himalaya and were then subjected to various degree of erosion to get deposited again with the Tertiary sediments.

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Explanation of Plate

Plate 1

(All the photomicrographs enlarged Ca × 500 unless otherwise mentioned, Coordinates mentioned according to Leitz Labourlex—No. 512859/103836).

1. *Cuneatisporites rarus* Kar, BSIP slide no. 10247, Coordinates 64, × 101.
2. *Falcisporites* sp. BSIP Slide no. 10248, Coordinates: 28.5, × 104.
3. *Indotriradites* sp., BSIP Slide no. 10447A, Coordinates: 14.5, × 90.5.
4. *Lundbladispora* sp., BSIP Slide no. 10254, Coordinates: 8.5 × 106.1.
5. *Lunatisporites* sp., BSIP slide no. 9133, Coordinates: 33.5, × 108.
6. *Callialasporites segmentatus* (Balme) Dev, BSIP Slide no. 10249, Coordinates: 23.5 × 94.5.
7. *Indotriradites* sp. BSIP slide no. 9135, Coordinates; 44, × 97.5.
8. *Horriditriletes* sp. BSIP slide no. 9143, Coordinates: 12, × 111.
9. *Araucariacites australis* Cookson, BSIP slide no. 9145, Coordinates. 31.5, × 102.

10-11. *Callialasporites trilobatus* (Balme) Dev, BSIP slide no. 10250, Coordinates: 24.5, × 98.

12. *Densoisporites velatus* Weyland & Krieger, BSIP slide no. 10252, Coordinates: 34.5 × 94.5.

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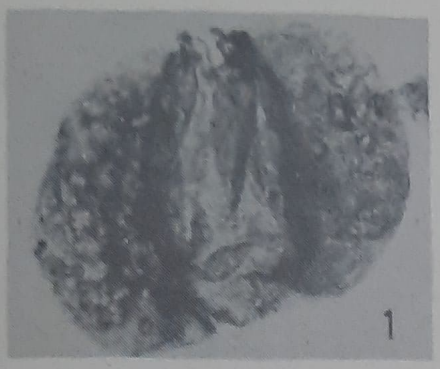
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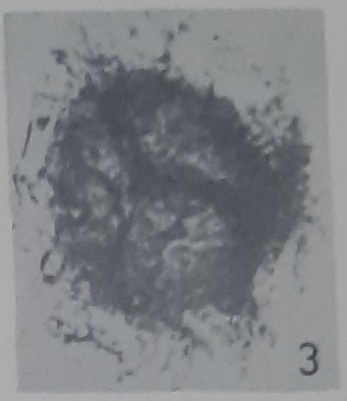
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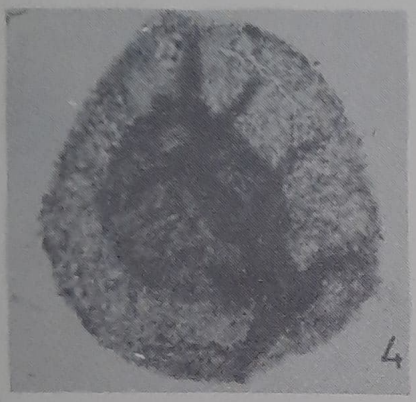
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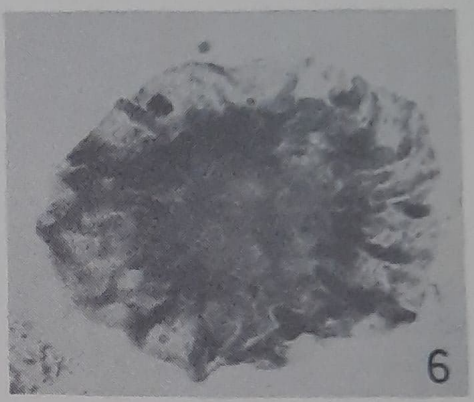
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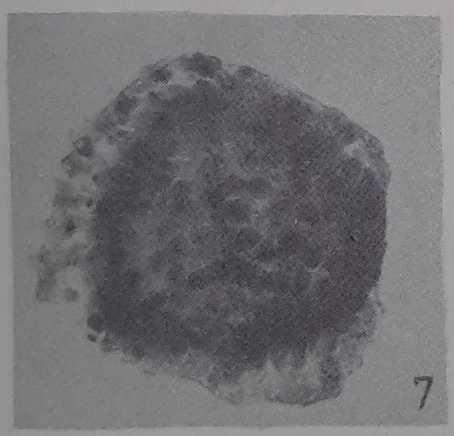
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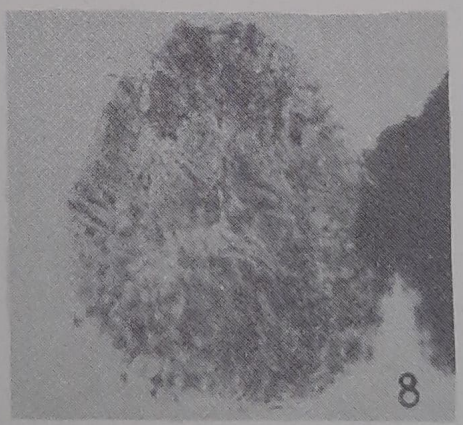
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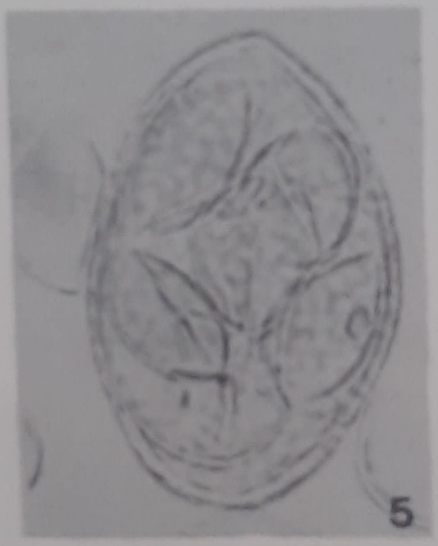
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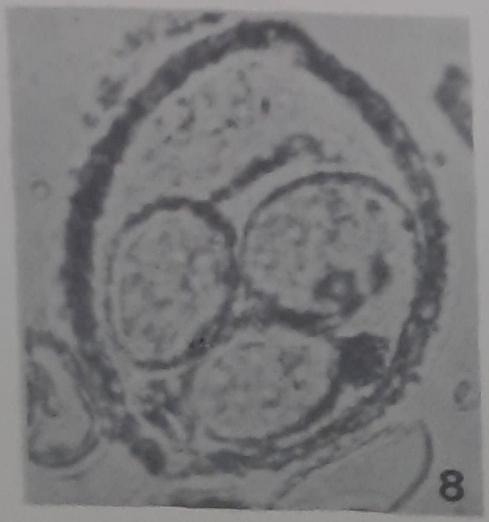
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