

# LOWER PERMIAN PALYNOFOSSILS FROM SUBANSIRI DISTRICT, ARUNACHAL PRADESH

The Subansiri District in Arunachal Pradesh is bounded on the east by West Siang District and on the west by East Kameng District. It is divided further into Lower and Upper Subansiri Districts. The Permian sediments occur in Lower Subansiri District and are exposed on a limited extent on Kimin-Zero and Doimukh-Sagalee sections. Often the outcrop pinches out because of the overthrusting of Miri and Bomdila Group.

The Permian sediments are wedged between the Siwalik sediments in the south and Bomdila/Miri Group in the north. The succession includes grey-green shales and siltstone at the base, overlain by alternations of sandstone, carbonaceous shale and coal. Between these carbonaceous shales and coal some calcareous concretions occur *in situ*. They were recently termed as faunal coal ball (Anand-Prakash *et al.*, 1988) as they contain numerous invertebrate fossils. Singh (1973) recovered invertebrate fossils out of coal balls present in black shales and suggested Middle to Upper Carboniferous age to the beds exposed on Kimin-Zero road. Sinha and Mathur (1977, 1982) have reported six species of *Eurydesma* along with productids from a ferruginous black shale at the base of Permian sediments exposed on Kimin-Zero road, north of Lichi and have suggested Asselian-Sakmarian age. *Glossopteris indica*, *Schizoneura gondwanensis*, *Vertebraria indica* and silicified wood fragments have been reported by the above authors from the overlying carbonaceous shales. However, the palynofossils from these sediments have not been recorded so far. The present investigation has been carried out on the Permian sediments exposed on Doimukh-Sagalee section. The carbonaceous shale and coal exposed near Kheel has yielded an assemblage comprising 21 genera, viz., *Leiotriletes*, *Callumispora*, *Brevitriletes*, *Apiculatisporis*, *Horriditriletes*, *Granulatisporites*, *Cyclobaculisporites*, *Psilalacinites*, *Indotriradites*, *Dentatispora*, *Parasaccites*, *Plicatipollenites*, *Virkkipollenites*, *Caheniasaccites*, *Sahnites*, *Vesti-*

*gisporites*, *Alisporites*, *Scheuringipollenites*, *Paravesicaspora*, *Striatites* and *Striatopodocarpites*.

The preservation of spores and pollen grains is poor yet they are identifiable. The assemblage is rich in trilete spores (52%) chiefly consisting of *Indotriradites* (20%), *Callumispora* (13%) and *Granulatisporites* (13%). Monosaccate pollen constitute 31 per cent of total assemblage out of which *Parasaccites* alone comprises 25 per cent. Nonstriate disaccate (6%) and striate disaccate pollen (2%) are poor in occurrence.

The present assemblage is comparable to the *Callumispora* assemblage (Biozone 3) of the Garu Formation from Siang District (Srivastava & Dutta, 1979; Srivastava *et al.*, 1988) where *Callumispora* occurs in dominance. The percentage of *Indotriradites* is maximum in the present investigation near Kheel in Lower Subansiri District while it reduces westward in Kameng District (Dutta *et al.*, 1988) and also eastward in Siang District (Srivastava *et al.*, 1988). In Lower Subansiri District *Granulatisporites* has also appeared up to 13 per cent while in adjoining areas it is not so significant. Thus the palynological assemblage from Kheel area in Lower Subansiri District retains its identity with a combination of *Indotriradites* and *Granulatisporites* in association with *Callumispora* and *Parasaccites*. Similar association is also known from the Karharbari sediments of Lower Gondwana Sequence from Korba Coalfield of Peninsular India (Bharadwaj & Srivastava, 1973) in view of the presence of *Indotriradites* though to a limited extent. The invertebrate fossils (viz., *Subansiria*, *Syringothyris*, *Eurydesma*, *Phestia* and *Fenestella*) reported by Sinha and Mathur (1977) suggest Asselian to Sakmarian age to the sediment exposed on Kimin-Zero road while they are not recorded from Kheel-Sagalee section in Lower Subansiri District. However, a comparable palynoflora and fauna occur together in the basal part of the Garu Formation in Siang District which indicate that the carbonaceous shales and coal sequence

in Lower Subansiri District are the westward extension of the Garu Formation of Siang District. The presence of marine fauna alongwith palynofossils suggests deposition of these sediments in coastal lagoons being periodically influenced by marine incursions.

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