PALYNOLOGY OF PERMIAN SEDIMENTS FROM SIKKIM

The palynological analysis of the Permian sediments in the Lesser Himalayan Zone exposed in the southern part of Sikkim in a tectonic window in Rangit Valley has been attempted. Sinha Roy (1980) has described the geology of these sediments in brief and accommodated the rocks overlying the Rangit Pebble Slate in Namchi Formation. Lately, Srivastava *et al.* (1983) have divided the Namchi Formation into two members, namely Namchi Member and Sikkip Member. The Namchi Member is characterised by grey, coarse to gritty, hard sandstone and well polished rounded to oval shaped pebbles cemented in arenaceous matrix. This member contains well preserved brachiopods, gastropods and bryozoa. The Sikkip Member includes dominantly dark grey, hard quartzitic, fine to coarse grained sandstone having intercalation of carbonaceous shale and coal. In these shales ill preserved impressions of *Glossopteris*, *Gangamopteris*, *Vertebraria* and *Schizoneura* have been recorded. Coal occurs as thin bands and is highly crushed and semianthracitic in nature. Sikkip Member is exposed along Naya Bazar to Sikkip and Jorethang to Namchi Section on both the banks of Rangit River. The present study is restricted to the sediments of Sikkip Member exposed on Jorethang-Namchi section. Out of 10 samples collected from this section only one sample has yielded well preserved palynofossils.

The palynofossil assemblage contains 21 genera and 26 species as listed below :

Leiotriletes tenuis, Lophotriletes minimus, Horriditriletes curvibaculosus, Brevitriletes unicus, Cyclogranisporites sp., *Laevigatosporites vulgaris, Striatites varius, S. solitus, S. alius, S. communis, Striatopodocarpites decorus, Faunipollenites varius, F. minor, Verticipollenites debilis, Lahirites* sp., *Crescentipollenites* sp., *Vesicaspora indica, Scheuringipollenites tentulus, S. maximus, Ephedripites* sp., *Weylandites lucifer, Ginkgocycadophytus vetus, Gondwanaeaplicates bharadwajii, Leiosphaeridia* sp., *Parasaccites invisus, Trochosporites* sp.

The present assemblage from the Sikkip Member of the Namchi Formation in Sikkim is dominated by striate disaccate pollen (35%) and trilete spores 34%. The chief components are *Striatites* (19%), *Faunipollenites* (10%), *Brevitriletes* (17%) and *Lophotriletes* (10%). *Scheuringipollenites* (13%) occurs next to the subdominants and the non-striate disaccate pollen constitute 21 percent of the total assemblage. In addition to these pollen presence of *Verticipollenites* (2%), *Crescentipollenites* (1%), *Ephedripites* (1%), *Weylandites* (2%) are also significant. *Lunatisporites* and *Gondwanaeaplicates* occur in rare percentage.

The palynoflora described from the Upper Coal Measures from Darjeeling by Ghosh (1983) contains striate disaccate pollen in dominance and thus compares with the Sikkip assemblage. *Verticipollenites, Crescentipollenites* and *Faunipollenites* occur in both the assemblages but the Upper Coal Measures of Darjeeling differ in having *Indospora, Thymospora* and *Distriatites*. Thus the resemblance between the two assemblages are significant yet the palynoflora from Sikkim appears to be different in having greater percentage of trilete spores in addition to rare amount of taeniate and plicate pollen grains.

Faunipollenites + *Striatopodocarpites* assemblage from the Lower Coal Measures of Darjeeling described by Srivastava *et al.* (1988) compares closely with the present assemblage in view of having striate disaccate pollen grains in dominance but differs from Sikkip assemblage in having rare amount of trilete spores.

The Permian palynoassemblage described from Dewathung area in Bhutan (Banerjee & Das Gupta, 1983) contains dominance of *Scheuringipollenites* and *Primuspollenites* and thus differs from the present assemblage described from the Sikkip Member from Sikkim. Also *Rhizomospora* and *Marsupipollenites* are absent in Sikkim assemblage.

The palynoflora described from the Garu Formation from Siang District in Arunachal Pradesh (Srivastava *et al.*, 1988) differs from the present assemblage as the latter shows the dominance of the striate disaccate pollen grains. The palynoflora from Siang (*loc. cit.*) as well as Kameng district

(Dutta *et al.*, 1988) contains *Callumispora*+ monosaccate dominant assemblage.

Banerjee *et al.* (1979) described an assemblage from Halidaygunj area in Meghalaya which is also dominant in *Scheuringipollenites* and thus differs from the present assemblage.

The dominance of striate disaccate pollen along with trilete spores alienates the Sikkip Member palynoflora close to the Upper Barakar palynoflora of the peninsular Gondwana sediments. In the present assemblage the non-striate disaccate pollen show a rising trend. This behaviour is usually observed near the transition from Lower to Upper Barakar palynozones. However, the presence of *Crescentipollenites*, *Lunatisporites*, *Weylandites*, *Ephedripites* and *Gondwanaeaplicates* though present in rare amounts in Sikkip Member are characteristic of Raniganj palynozones and suggest a younger aspect to the palynoflora of Sikkip Member of the Namchi Formation from Sikkim.

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