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Modern pollen deposition in Mikir hills, Assam

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ABSTRACT

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In the present investigation eight surface samples collected in a transact from within the forest to open land around Diphu-Lumding areas of Karbi Anglong District (Lat. 25°2' & 26°1' N: Long. 92°44' & 93°42' E) in Assam were studied with a view to construct pollen spectra from Mikir hills of Assam.

Key-words— Pollen spectra, Mikir hills, Assam, India.

असम की मिकिर पहाड़ियों में आधुनिक परागकण निक्षेपण

समीर कुमार बेरा

सारांश

प्रस्तुत शोध पत्र में असम के कर्बी-आंगलांग जिले (25° 2' अक्षांश एवं 26°1' उत्तर : 92°44', रेखांश एवं 93° 42' पूर्व) के दिफू-लुमडिंग क्षेत्रों के चारों ओर के विवृत क्षेत्र के जंगलों के भीतर से संगृहीत 8 पृष्ठीय नमूनों का अध्ययन किया गया, ताकि असम की मिकिर पहाड़ियों से प्राप्त परागकण स्पेक्ट्रा का निर्माण किया जा सके.

संकेत शब्द—परागकण स्पेक्ट्रा, मिकिर पहाड़ियां, असम, भारत.

INTRODUCTION

HITHERTO no information is available on recent pollen spectra from Mikir hills region of Assam. Although preliminary works have been carried out at Cinnamara (Gupta, 1971), Ledo Matikhad (Bhattacharya & Goswami, 1981), Digboi (Bhattacharya & Chanda, 1982), Upper Assam (Bhattacharya, 1985; Bhattacharya *et al*., 1986). This is the first comprehensive attempt has been made to study the composition of pollen rain through pollen analysis and surface sediments from Mikir hill region (Fig. 1).

The area experiences a typical subtropical monsoon climate with mean annual rainfall of 22 to 35 cm. The forest types are of moist evergreen and moist mixed deciduous. The forest is dominated by principal arboreal taxa like *Tetrameles nudiflora, Amoora wallichii, Artocarpus chaplasa, Mesua ferrea, Terminalia chebula, Morus laevigata, Cinnamomum glanduliforum, Bombax ceiba, Adina cordifolia, Lagerstroemia parviflora, Dillenia pentagyna, Anthrocephalus cadamba, Bauhinia variegata, Murraya koenghii, Clerodendron viscosum,* etc. Another forest formation occasionally found at places is bamboo mixed with wild banana trees. Due to extensive felling of important taxa, the condition of the major crops of the formation have deteriorated over the years and natural regeneration is almost absent due to grazing by the cattle of the neighbouring villages.

The object of undertaking of moss cushion soil and mud samples collected in a transect at 100 m interval from within the forest into the open land with a view to understand the pollen/vegetation relationship in Mikir hills which will help in

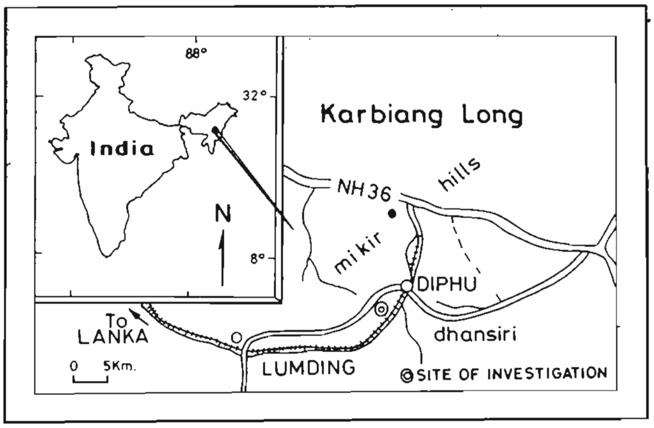

Fig. 1—Showing site of sampling.

ascertaining various climatic cycles to a great extent involving various controlling factors in the past.

MATERIAL AND METHODS

Sample numbers 1- 4 (soil) were collected in a transect from within the forest to the edge, numbers 5 and 8 (mud) were collected from near the cultivated land whereas, 6 and 7 (moss cushion) were collected from open area. The samples were chemically processed by the conventional acetolysis (Erdtman, 1943) method.

All the type and figured specimens are deposited in the repository of Birbal Sahni Institute of Palaeobotany, Lucknow.

POLLEN / VEGETATION RELATIONSHIP

The pollen spectra (Fig. 2) show pollen and spores of various taxa in varying proportions. High altitude taxa like *Pinus*, *Alnus* and *Larix* effectively mask the local taxa. The major arboreal taxa like *Ardisia*, *Artocarpus*, *Dillenia*, *Terminalia*, Oleaceae, Malvaceae, Anacardiaceae and Meliaceae are the only elements recorded within 9-32 % out of which the high altitude taxa attain upto 3-8 %.

Ground vegetation is largely dominated by graminids (21-27 %) followed by other herbaceous elements like Asteraceae (14-15 %), Cheno/Ams (2- 4 %), and Lamiaceae, Apiaceae, Rubiaceae, Ranunculaceae and Impatiens are recorded within 1-3 %. *Brassica nigra* (4-6 %) is recorded in the samples collected from near the cultivated land. Cyperaceae, *Polygonum serrulatum*, *P. plebejam* are the main marshy elements whereas, *Potamogeton*, *Typha* and Liliaceae represent aquatic vegetation.

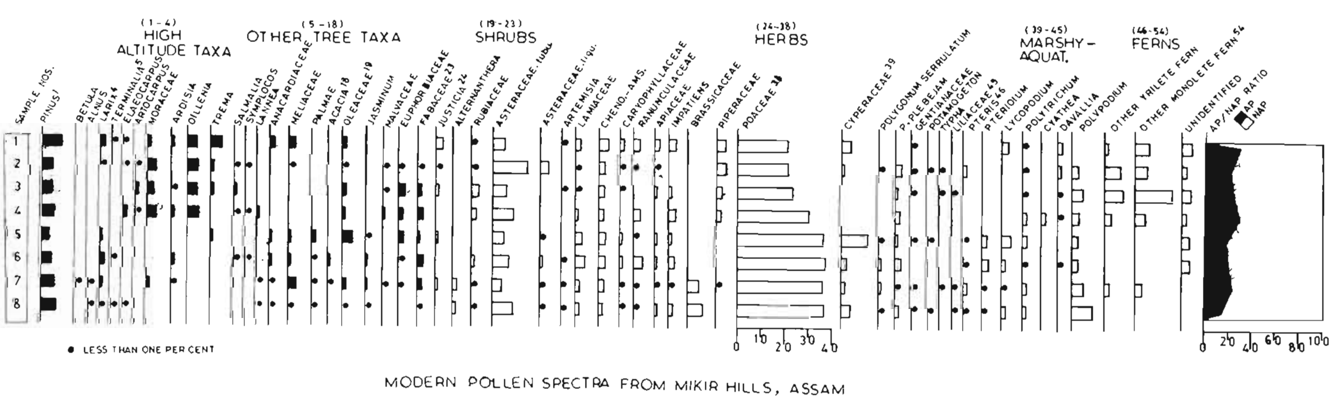

Fig. 2—Showing pollen spectra from Mikir Hills

PLATE 1

(All figures X 1000)

1.	*Terminalia* sp.	11.	Amaranthaceae	22. & 23.	Asteraceae- tubuliflorae
2.& 18.	Rubiaceae	12.	Asteraceae-liguliflorae	24. 25. & 26.	Trilete fern spores
3.	*Salmalia* sp.	13.	Cyperaceae	27. 31. & 33.	Unidentified
4.	*Symplocos* sp.	14.	Gentianaceae	28. & 29.	Fungal spores
5.	Moraceae	15.	Chenopodiaceae	30.	*Pteris* sp.
6.& 16.	Oleaceae	17.	*Acacia* sp.	32.	Monolete fern spore
7.	Euphorbiaceae	19.	*Elaeocarpus* sp.	34.	*Nigrospora* sp.
8.& 9.	Lamiaceae	20.	Poaceae	35.	*Curvularia* sp.
10.	Ranunculaceae	21.	Anacardiaceae		

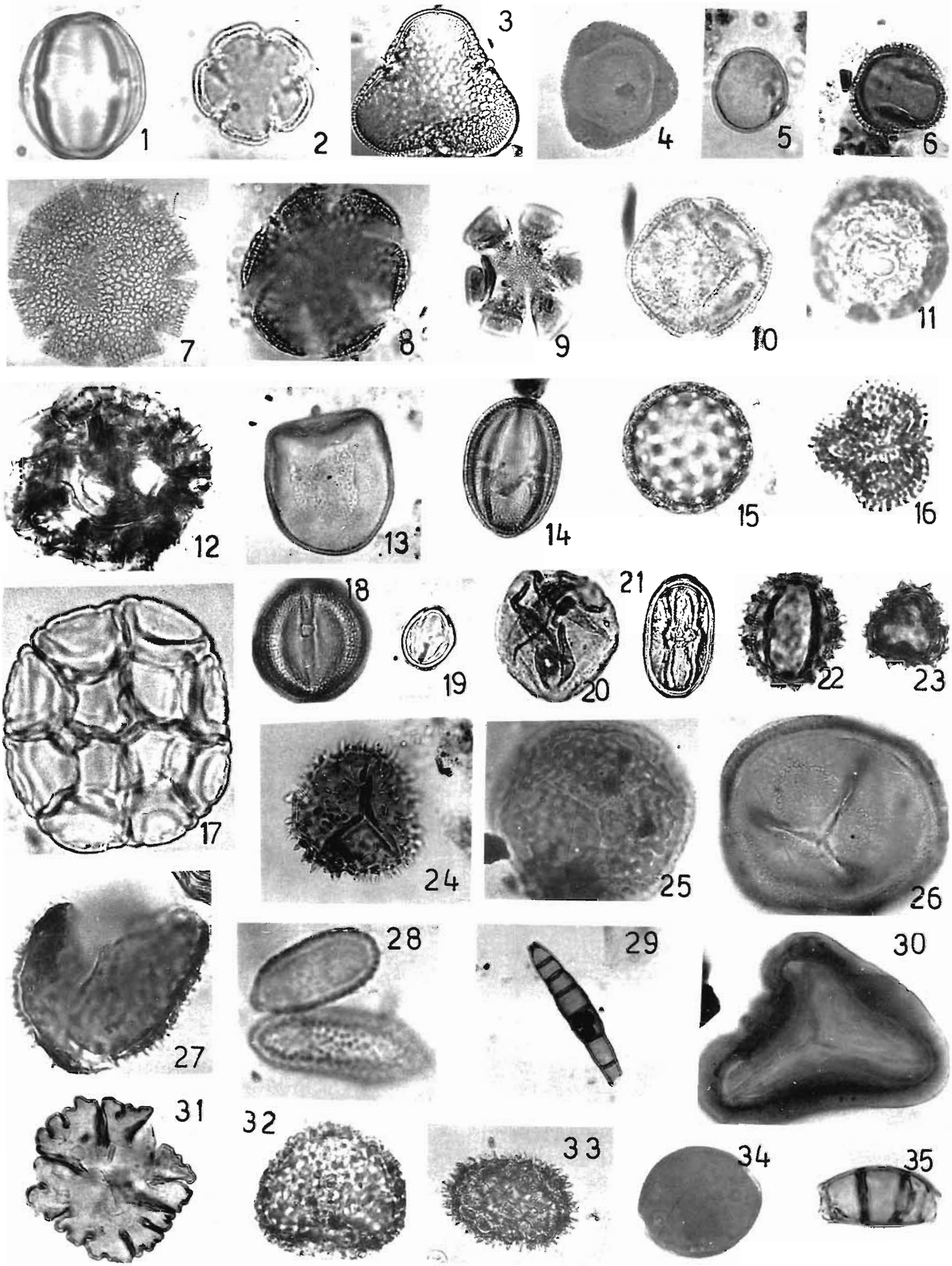
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PLATE 1

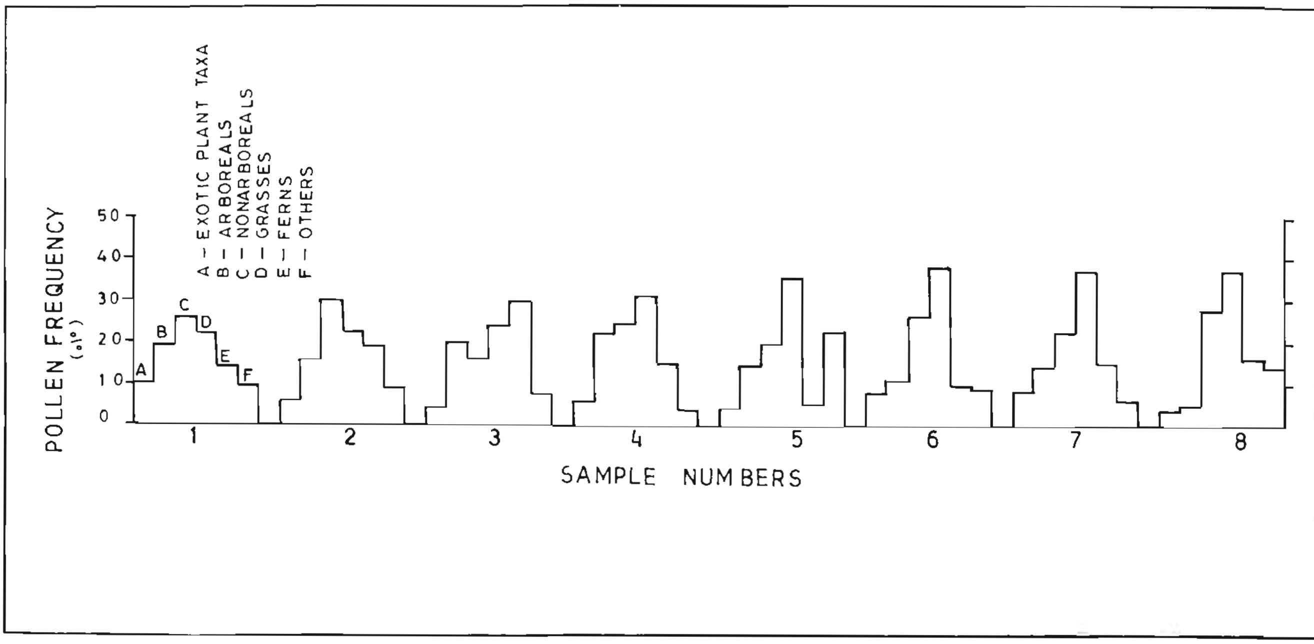

Fig. 3—Showing comparison of pollen frequencies in different samples.

Monolete as well as trilete fern spores are mainly derived from the species of *Polypodium, Davallia, Pteris, Pteridium* and *Polytrichum*, etc. A large number of saprophytic fungi have been encountered in the sediments. A composite pollen spectra showing relationship between exotic plants and other arboreals with grasses and other non arboreals and ferns could be an aid to understand the pattern of pollen dispersal and deposition in and around Mikir hills, Assam (Fig. 3).

CONCLUSION

Although the study does not fully cohere with the present day set up of vegetation the permutation and combination of the pollen data would be valuable for tracing the Quaternary vegetational history and changes in palaeoclimate and ecology in and around Mikir hills, Assam.

Reasons for pollen/vegetation anomalies seem to be more than one, such as; i) differential pollen production of different species in different years, ii) difference in pollen transport distance which varies widely because of the physical properties of the pollen grains themselves, and influenced by topography, vegetation cover and atmospheric conditions, iii) differences in preservation and pattern of deposition of pollen types, iv) local variations in species distribution and frequency of the present vegetation, v) entomophily among most of the forest constituents and bushy fencing of the forest elements which precludes the exit of tree pollen from the forest, vi) alkaline nature of soil which is not congenial for preservation of pollen grains, spores and other microbiota, vii) preponderance of saprophytic fungi in the sediments leading to biodegradation of certain pollen and spores.

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