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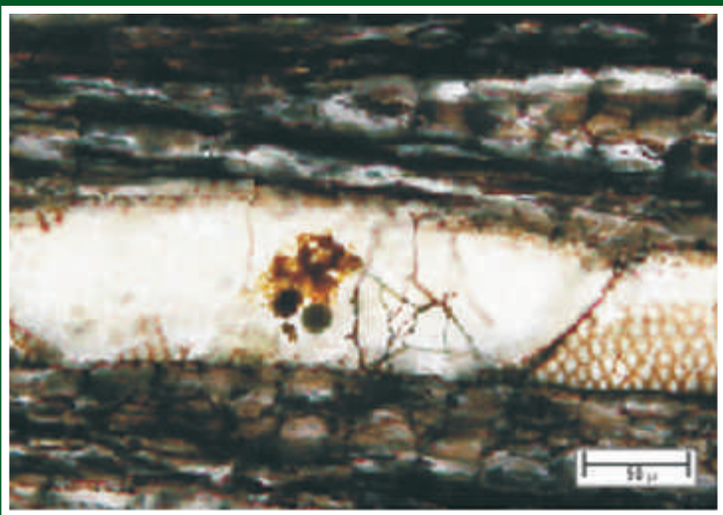

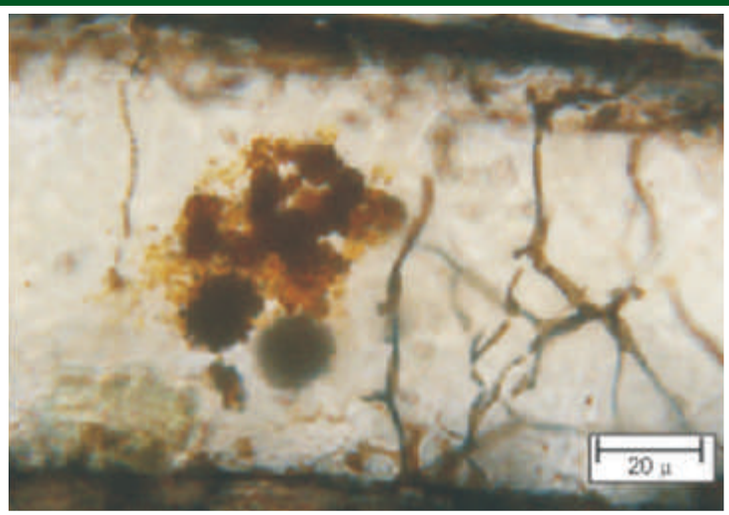

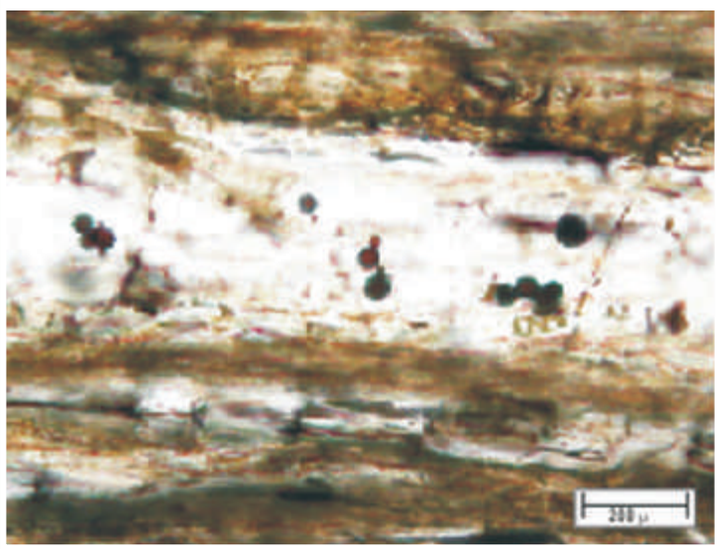

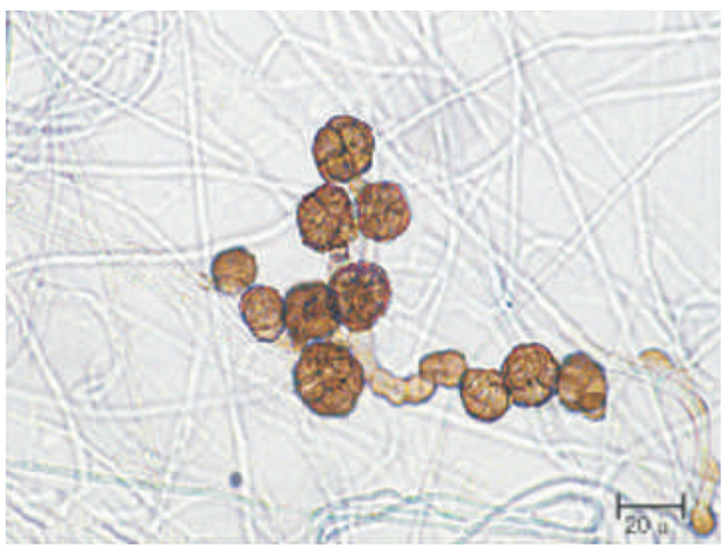

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CONTENTS

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CONTENTS

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N.C. Mehrotra

Dated : 1 November, 2009

(Naresh C. Mehrotra)

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Notes on elements of the Oligocene flora from the Makum Coalfield, Assam, India

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ABSTRACT

Mehrotra RC, Dilcher DL & Lott TA 2009. Notes on elements of the Oligocene flora from the Makum Coalfield, Assam, India. The Palaeobotanist 58(1-3): 1-9.

A new species *Daphnogene makumensis* sp. nov. (Lauraceae), plus *Equisetum* sp. both new to the flora, and *Mesua antiqua* Awasthi *et al*. are described from the Tikak Parbat Formation of the Makum Coalfield, Assam, India. The formation is considered Late Oligocene in age. The fossil assemblage indicates the existence of tropical evergreen to moist deciduous forest in the region during the Late Oligocene.

Key-words—Equisetaceae, Clusiaceae, India, Lauraceae, Oligocene, Tikak Parbat Formation.

भारत में असम के माकुम कोयला क्षेत्र से प्राप्त अल्पनूतन वनस्पति तत्वों पर टिप्पणियाँ

आर.सी. मेहरोत्रा, डेविड एल. डिलचर एवं टेरी ए लोट

सारांश

भारत में असम के माकुम कोयला क्षेत्र के टीकाक पर्वत शैलसमूह से *डेफनोजीन माकुमेन्सिस* नवजाति (लॉरेसी) एवं *इक्वीसेटम* जाति दोनों वनस्पति के लिए नई हैं तथा *मेसुआ एंटिक्वा* अवस्थी एवं अन्य को वर्णित किया गया है। इस शैलसमूह की आयु अंतिम अल्पनूतन मानी गई है। ये जीवाश्म समुच्चय अंतिम अल्पनूतन के दौरान क्षेत्र में उष्णकटिबंधीय सदाहरित से आर्द्र पतझड़ी वनों का होना इंगित करते हैं।

संकेत-शब्द—इक्वीसीटेसी, क्लुसिएसी, भारत, लॉरेसी, अल्पनूतन, टीकाक पर्वत शैलसमूह।

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Permineralized fungal remains in the fossil wood of *Barringtonia* from the Deccan Intertrappean sediments of Yavatmal District, Maharashtra, India

RASHMI SRIVASTAVA[1], D.K. KAPGATE[2] AND SHANTANU CHATTERJEE[1]

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ABSTRACT

Srivastava R, Kapgate DK & Chatterjee S 2009. Permineralized fungal remains in the fossil wood of *Barringtonia* from the Deccan Intertrappean sediments of Yavatmal District, Maharashtra, India. The Palaeobotanist 58(1-3): 11-19.

Fungal infection (parasitism and saprophytism) in the fossil flora of Deccan Intertrappean sediments is well documented from Chhindwara, Dindori, Mandla, Nagpur and Seoni areas of central India. In the present communication, a well preserved dicotyledonous fossil wood showing resemblance with the extant genus *Barringtonia* Forster & G. Forster of the family Lecythidaceae is recorded for the first time from the Yavatmal District, Maharashtra. The anatomical study of wood reveals that it is endogenously infected with saprophytic fungus *Epicoccum* Link. ex Schlecht and fungal conidia are profusely distributed in the vessels of the fossil wood. Very fine, ill preserved mycelium is also seen at places. Presence of the genus *Barringtonia,* as well as fungus *Epicoccum* is indicative of warm and humid conditions in the area during the time of deposition of intertrappean sediments.

Key-words—Fungal remains, Fossil wood, Lecythidaceae, Deccan Intertrappean beds, Maharashtra, Saprophyte, Climate.

भारत में महाराष्ट्र के यवतमाल जिले के दक्कन अंतःट्रेपी अवसादों से प्राप्त बैरिंगटोनिया के काष्ठ जीवाश्म में पर्मिनीकृत कवक अवशेष

रश्मि श्रीवास्तव, डी.के. कपगटे एवं शांतनु चटर्जी

सारांश

मध्य भारत के छिंदवाड़ा, डिंडोरी, मांडला, नागपुर एवं सिवनी क्षेत्रों से प्राप्त दक्कन अंतःट्रेपी अवसादों के पेड़-पौधों के जीवाश्मों में कवक संक्रमण (परजीविता एवं मृतजीविता) सुप्रलेखित किया गया है। इस संप्रेषण में, महाराष्ट्र के यवतमाल जिले से प्राप्त सुपरिरक्षित द्विबीजपत्री काष्ठ जीवाश्म लेसीथिडेसी कुटुंब के वंश *बैरिंगटोनिया* फार्स्टर एवं जी. फॉर्स्टर से समानता दर्शाती हुई पहली बार अंकित की गई है। काष्ठ का शारीरीय अध्ययन सुझाता है कि यह मृतजीवी कवक *एपिकोकम* लिंक से अंतःप्रवर्धी रूप से संक्रमित है तथा काष्ठ जीवाश्म की वाहिका में कवक कोनिडिया प्रचुरता में विद्मान हैं। अत्यन्त महीन कवक जाल भी कई

स्थानों पर मिलते हैं। क्षेत्र में *बैरिंगटोनिया* वंश के साथ-साथ *एपिकोकम* कवक की विद्यमानता अंतःट्रेपी अवसादों के निक्षेपण के दौरान कोष्ण एवं आर्द्र स्थितियों की द्योतक है।

संकेत-शब्द—कवक अवशेष, काष्ठ जीवाश्म, लेसीथिडिएसी, दक्कन अंतःट्रेपी संस्तर, महाराष्ट्र, मृतजीवी, जलवायु।

The Palaeobotanist 58(2009) : 21-28
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Late Holocene vegetation and climate change in Loktak Lake region, Manipur, based on pollen and chemical evidence

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ABSTRACT

Nautiyal CM & Chauhan MS 2009. Late Holocene vegetation and climate change in Loktak Lake region, Manipur, based on pollen and chemical evidence. The Palaeobotanist 58(1-3): 21-28.

The pollen and elemental analyses from a 73 cm deep sediment profile from Loktak Lake region, Manipur have provided insight into the changing vegetation and climatic scenario in the region during the Late Holocene. The investigation has revealed that between 1650 and 600 yr B.P., open vegetation comprising largely grasses and heathland taxa Asteraceae, Chenopodiaceae/Amaranthaceae, etc. with sprinkle of trees viz., *Holoptelea*, *Symplocos*, *Acacia*, etc. occurred in the region adjoining to the lake. The good profusion of ferns, fungal and algal remains as well as presence of aquatics implies that a humid climate prevailed in the region. The low C/N ratio also corroborates such climatic condition. The retrieval of Cerealia and other cultural pollen taxa denotes some sort of agricultural practice in the vicinity of the lake. From 600 yr B.P. to Present the expansion of open vegetation and a contemporary reduction of trees infer the inception of a less humid climate probably owing to reduction in monsoon precipitation. This is also evidenced by a sharp decline in ferns, fungal and aquatic elements. However, the agricultural practice continued with same pace, as before since the culture pollen taxa do not show any distinct alteration.

Key-words—Late Holocene, Loktak Lake, Pollen, Palaeoclimate, Sediments.

पराग एवं रासायनिक प्रमाण पर आधारित मणिपुर के लोकटक झील क्षेत्र में होलोसीन-अंत काल के वनस्पति एवं जलवायु परिवर्तन

सी.एम. नौटियाल एवं एम.एस. चौहान

सारांश

मणिपुर के लोकटक झील क्षेत्र से प्राप्त एक 73 सेमी गहरी अवसाद परिच्छेदिका से प्राप्त पराग व रासायनिक अभिलेखों ने होलोसीन के अंतिम दौर में क्षेत्र में बदलते वानस्पतिक और जलवायवी परिदृश्य पर अंतर्दृष्टि प्रदान की है। अन्वेषण से खुलासा हुआ है कि 1650 वर्ष पूर्व एवं 600 वर्ष पूर्व के बीच झील के समीप के क्षेत्र में वृक्षों के छितराव अर्थात् *होलोप्टेली, सिंपलोकॉस, एकासिया* इत्यादि सहित खुली वनस्पति मुख्य रूप से घास एवं हीथलैंड टैक्सा ऐस्टेरासी, कीनोपोडिएसी/अमरेंथेसी इत्यादि पाई गईं। पर्णांग, कवक एवं शैवाल अवशेष के आधिक्य के साथ-साथ जलीयों की विद्यमानता संकेत देती है कि क्षेत्र में आर्द्र जलवायु थी। निम्न कार्बन/नाईट्रोजन अनुपात भी ऐसी जलवायु स्थिति को संपुष्ट करता है। सेरेलिया एवं अन्य 'कल्चर' परागाणु टैक्सा की

प्राप्ति झील के सान्निध्य में कृषि को इंगित करती है। 600 वर्ष पूर्व से वर्तमान तक खुले वनस्पति के प्रसार एवं वृक्षों की समकालीन कमी संभवतः मानसून वर्षण में कमी जनित कम आर्द्र/शुष्क जलवायु के आरंभ को अनुमानित करती है। यह पर्णांग, कवक एवं जलीय तत्वों में तेजी से अवनति द्वारा भी सुस्पष्ट है। फिर भी, कृषि पूर्व की भाँति जारी रही क्योंकि 'कल्चर' परागाणुओं में कोई विशिष्ट परिवर्तन नहीं दिखता।

संकेत-शब्द—होलोसीन, लोकटक झील, पराग, पुराजलवायु, अवसाद।

The Palaeobotanist 58(2009): 29-32
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Fossil wood from the Tipam Group of North Hlimen, Mizoram

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[2]*Geology Department, Mizoram University, Aizawl, 796012, India.*

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ABSTRACT

Srivastava G, Mehrotra RC & Tiwari RP 2009. Fossil wood from the Tipam Group of North Hlimen, Mizoram. The Palaeobotanist 58(1-3): 29-32.

Cynometroxylon holdenii (Gupta) Prakash and Bande (1980) is described for the first time from Builum area situated near North Hlimen, Kolasib District, Mizoram and belongs to the Tipam Group of Late Miocene in age. Its occurrence indicates warm and humid climate in the region during the deposition of the sediments.

Key-words—Fossil wood, North Hlimen, Late Miocene, Palaeoecology.

मिज़ोरम में उत्तरी ह्लिमैन के टीपम समूह से प्राप्त काष्ठ जीवाश्म

गौरव श्रीवास्तव, आर.सी. मेहरोत्रा एवं आर.पी. तिवारी

सारांश

मिज़ोरम में कोलासिब जिले के उत्तरी ह्लिमैन के निकट स्थित बुइलम से *सायनोमेट्रोक्सीलॉन होल्डेनीयाई* (गुप्ता) प्रकाश एवं बॉडे (1980) पहली बार अभिलिखित की गई है तथा यह टीपम समूह के अंतिम मध्यनूतन आयु से संबंधित है। अवसादों के निक्षेपण के दौरान क्षेत्र में इसकी प्राप्ति कोष्ण एवं आर्द्र जलवायु का संकेत करती है।

संकेत-शब्द—काष्ठ जीवाश्म, उत्तरी ह्लिमैन, अंतिम मध्यनूतन, पुरापारिस्थितिविज्ञान।

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Plant fossils from Dafla Formation, West Kameng District, Arunachal Pradesh

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ABSTRACT

Srivastava R & Mehrotra RC 2009. Plant fossils from Dafla Formation, West Kameng District, Arunachal Pradesh. The Palaeobotanist 58(1-3): 33-49.

Dicotyledonous leaf impressions collected from the Dafla Formation (=Lower Siwalik) of Arunachal Pradesh are described in the present communication. The fossils belong to Middle–Upper Miocene in age and comprise of seven genera belonging to six families, namely, *Tabernaemontana precoronaria* Prasad (Apocynaceae), *Salacia miocenica* sp. nov. (Celastraceae), *Millettia koilabasensis* Prasad (Fabaceae), *Actinodaphne palaeomalabarica* sp. nov. and *Litsea preglabrata* sp. nov. (Lauraceae), *Memecylon arunachalensis* sp. nov. (Melastomataceae) and *Randia miowallichii* Prasad (Rubiaceae). In addition, *Dicotylophyllum breyniodes* sp. nov., a dicotyledonous leaf of uncertain affinities, is also reported. The distribution of modern counterparts of the fossils indicates tropical vegetation suggesting warm and humid climate during the deposition of the sediments.

Key-words—Leaf impressions, Dafla Formation, Tropical, Middle-Upper Miocene, Arunachal Pradesh.

अरूणाचल प्रदेश में पश्चिमी कामेंग जिले के डाफ्ला शैलसमूह से प्राप्त पादप जीवाश्म

रश्मि श्रीवास्तव एवं आर.सी. मेहरोत्रा

सारांश

अरूणाचल प्रदेश के डाफ्ला शैलसमूह (निम्न शिवालिक) से संगृहीत द्विबीजीपत्री पत्तियों के मुद्राश्म मौजूदा संप्रेषण में वर्णित हैं। जीवाश्म मध्य-ऊपरी मध्यनूतन (मायोसीन) आयु के हैं तथा छः कुटुंबों, नामतः *टेबर्नेमोनटाना प्रीकोरोनेरिया* प्रसाद (एपोसायनेसी), *सेलेसिया मायोसेनिका* नवजाति (सेलेसट्रेसी), *मिलेशिया कोइलाबासेन्सिस* प्रसाद (फैबेसी), *एक्टिनोडेफ्ने पेलियोमालाबारिका* नवजाति एवं *लिट्सिया प्रिग्लैब्रेटा* नवजाति (लॉरेसी), *मेमेसीलॉन अरुणाचलेन्सिस* नवजाति (मेलेस्टोमेटेसी) और *रेन्डिया मायोवेलीचीयाई* प्रसाद (रुबिएसी) सात वंश सन्निहित हैं। इसके अतिरिक्त, अनिश्चित बंधुताओं की एक द्विबीजीपत्री पत्ती *डाइकोटिलोफिल्लम ब्रायनिओएडिस* नवजाति भी मिली है। जीवाश्मों के आधुनिक प्रतिरूपों का वितरण अवसादों के निक्षेपण के दौरान कोष्ण एवं आर्द्र जलवायु सुझाते हुए उष्णकटिबंधीय वनस्पति इंगित करते हैं।

संकेत-शब्द—पत्ती मुद्राश्में, डाफ्ला शैलसमूह, उष्णकटिबंधीय, मध्य ऊपरी, मध्यनूतन, अरूणाचल प्रदेश।

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New coniferous foliage shoot from the Lower Gondwana beds of India

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ABSTRACT

Srivastava AK & Agnihotri D 2009. New coniferous foliage shoot from the Lower Gondwana beds of India. The Palaeobotanist 58(1-3): 51-56.

The morphological and cuticular features of new sterile, branched coniferous foliage shoot, *Walkomiella sahnii* sp. nov. collected from the carbonaceous shale samples of Karharbari Formation, Rajhara Colliery of Daltonganj Coalfield, Jharkhand State are described. New species is characterized by homomorphic leaves showing rhomboidal shape, acuminate apex, broad base, uninerved; cuticle is differentiated into thick abaxial and thin adaxial surfaces and stomata are irregularly distributed only on adaxial surface. Fertile structures are not known. Specimen represents the first report of *Walkomiella* as coalified compression in Lower Gondwana sediments of India. Earlier records of W. *indica* Surange & Singh 1951 and *Walkomiella* sp. are based on dispersed cuticles of leaf and seed bearing shoot recovered through maceration of samples.

Key-words—*Walkomiella sahnii* sp. nov., Conifer, Morphology, Cuticle, Lower Gondwana, Lower Permian.

भारत के निम्न गोंडवाना संस्तरों से प्राप्त नवीन शंकुधारी पर्णी प्ररोह

ए.के. श्रीवास्तव एवं दीपा अग्निहोत्री

सारांश

झारखंड राज्य में डाल्टनगंज कोयला क्षेत्र की राजहरा कोयला खदान की करहरबारी शैलसमूह के कार्बनी शैल नमूनों से संगृहीत नवीन अनुर्वर, शाखित शंकुधारी पर्णी प्ररोह, *वाल्कोमियेला साहनाई* नवजाति के आकारिकीय एवं उपत्वचीय लक्षण वर्णित किए हैं। नवीन जाति चतुष्कोणी आकार, लंबाग्र शिखर, विस्तृत आधार, एकशिरीय दर्शाते हुए केवल एक प्रकार की पत्ती अर्थात समरूपी द्वारा अभिलक्षणित है; उपत्वचा मोटी अपाक्ष एवं तनु अभ्यक्ष पृष्ठों में वर्गीकृत है तथा रंध्र केवल अभ्यक्ष पृष्ठ पर अनियमित रूप से वितरित हैं। फलद संरचनाओं की जानकारी नहीं हैं। नमूना भारत के निम्न गोंडवाना अवसादों में कोयलित संपीडाश्म के रूप में *वाल्कोमियेला* का प्रथम अभिलेख निरुपित करता है। *वाल्कोमियेला इंडिका* सुरंगे व सिंह 1951 एवं *वाल्कोमियेला* जाति के पूर्व अभिलेख नमूनों के द्रव सम्मर्दन से प्राप्त पत्ती और बीज किमान प्ररोह के परिक्षिप्त उपत्वचाओं पर आधारित हैं।

संकेत-शब्द—*वाल्कोमियेला साहनाई* नवजाति, शंकुवृक्ष, आकृतिविज्ञान, उपत्वचा, निम्न गोंडवाना, निम्न पर्मियन।

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Rhizopalmoxylon singulare sp. nov. - coralloid palm roots from the Late Cretaceous Deccan Intertrappean beds of Nawargaon, India

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ABSTRACT

Bonde SD, Chate SV & Gamre PG 2009. *Rhizopalmoxylon singulare* sp. nov. - coralloid palm roots from the Late Cretaceous Deccan Intertrappean beds of Nawargaon, India. The Palaeobotanist 58(1-3): 57-65.

Permineralized coralloid aerial palm roots forming a thick compact mantle have been described from the Deccan Intertrappean beds of Nawargaon, Maharashtra, India. A medium sized root exhibits rhizodermis, thick exodermis, thin outer and wide inner cortex; fibers in the inner cortex; air cavities in 3-7 concentric rings in the middle zone of inner cortex; polyarch stele with 12-15 xylem and phloem bundles and sclerenchymatous pith with 1-3 medullary bundles. Morpho-anatomical characters of the root suggest its affinity with coralloid roots probably of *Hyphaene dichotoma* (White) Furtado and *Phoenix sylvestris* (L.) Roxb. A combination of details of stelar and cortical region is found to be a better criterion to resolve the natural affinity of permineralized palm roots. Two new combinations of *Rhizopalmoxylon, R. angiorhizon* and *R. macrorhizon* are also suggested.

Key-words—*Rhizopalmoxylon*, Coralloid roots, Arecaceae, Evolution, Deccan Intertrappeans, Maastrichtian.

भारत में नवरगाँव के अंतिम क्रिटेशस दक्कन अंतःट्रेपी संस्तरों से प्राप्त *राइज़ोपामॉक्सीलॉन सिंगुलरी* नवजाति-प्रवालाभ ताड़ जड़ें

एस.डी. बोंडे, एस.वी. चाटे एवं पी.जी. गामरे

सारांश

भारत में महाराष्ट्र के नवरगाँव के दक्कन अंतःट्रेपी संस्तरों से एक मोटी संहत प्रावार गठित करती हुई पर्मिनीकृत प्रवालाभ वायव ताड़ जड़ें वर्णित की गई है। एक मध्यम आकारी जड़ मूलत्वचा, मोटी बाह्यमूलत्वचा, तनु बाह्य व विस्तृत अंतः वल्कुट; अंतः वल्कुट में तंतु; अंतः वल्कुट के मध्य मंडल में 3-7 संकेन्द्री वलयों में वायु गुहिकाएं; 12-15 दारु (जाइलम) और पोषवाह बंडलों सहित बहु-आदिदारुक रंभ तथा 1-3 मज्जा बंडलों सहित दृढ़ोतक मज्जा प्रदर्शित करती है। जड़ के शारीरीय-आकार अभिलक्षण संभवतः *हाइफेने डिकोटोमा* (वाईट) फर्टेडो और *फीनिक्स सिलवेस्ट्रिज* (लिन.) रॉक्सब की प्रवालाभ जड़ों से बंधुता सुझाती है। तारकीय एवं वल्कुटी का संयोजन पर्मिनीकृत ताड़ जड़ों की प्राकृतिक बंधुता के विभेदन करने का बेहतर आधार पाया गया है। *राइज़ोपामॉक्सीलॉन, आर. एन्जियोराइज़ॉन* एवं *आर. मेक्रोराइज़ॉल* के दो नवीन संयोजन भी प्रस्तावित हैं।

संकेत-शब्द— *राइज़ोपामॉक्सीलॉन,* प्रवालाभ जड़ें, एरेकेसी, विकास, दक्कन अंतःट्रेपी, मास्ट्रीक्शियन।

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Araliaceous fossil flower from the Deccan Intertrappean beds of Madhya Pradesh, India

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ABSTRACT

Kapgate VD, Kapgate DK & Sheikh MT 2009. Araliaceous fossil flower from the Deccan Intertrappean beds of Madhya Pradesh, India. The Palaeobotanist 58(1-3): 67-74.

Araliaceous fossil flower belonging to the genus *Tetraplasandra* Hillebr. is reported from the Deccan Intertrappean beds of Mohgaonkalan, Chhindwara District, Madhya Pradesh. The flower is characterized by its very small size with horny projections on the ovary wall and thallamus.

Key-words—Fossil flower, Deccan Intertrappean, Late Cretaceous-Early Eocene, Mohgaonkalan, Araliaceae, *Tetraplasandra*.

भारत में मध्य प्रदेश की दक्कन अंतःट्रेपी संस्तरों से प्राप्त अरेलिएसीय पुष्प जीवाश्म

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सारांश

मध्य प्रदेश में छिंदवाड़ा जिले के मोहगाँवकलाँ की दक्कन अंतःट्रेपी संस्तरों से *टेट्राप्लेसेंड्रा* हिलेब्र वंश से संबंधित अरेकेसीय पुष्प जीवाश्म मिला है। यह पुष्प छोटे आकार के साथ अंडाशय भित्ति एवं थैलेमस पर शृंगवत प्रक्षेपण से अभिलक्षणित है।

संकेत-शब्द—पुष्प जीवाश्म, दक्कन अंतःट्रेपी, अंतिम क्रिटेशस-प्रारम्भिक इओसीन, मोहगाँवकला, अरेलिएसी, *टेट्राप्लेसेंड्रा*।

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Resolution of fossil monocotyledonous roots to the natural taxa

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ABSTRACT

Bonde SD 2009. Resolution of fossil monocotyledonous roots to the natural taxa. The Palaeobotanist 58(1-3): 75-81.

Monocotyledons possess endogenously originated adventitious roots. Such permineralized roots occur abundantly in the Cretaceous and onward horizons assigned to the artificial genera *Rhizopalmoxylon* Gothan, *Aerorhizos* Chitaley, *Velamenorhizos* Barlinge and Paradkar and *Hygrorhizos* Trivedi *et al.*. Fossil roots reported so far have not been described with uniform terminologies which lack precision and delimitations of the tissues. Considering a need to have uniform terminologies in the description of permineralized roots, a system based upon Seubert's work has been proposed to describe the monocotyledonous roots.

Key-words—Monocotyledons, Permineralization, Anatomy, Roots.

प्राकृतिक टैक्सा के लिए एकबीजपत्री जड़ों के जीवाश्मों का वियोजन

एस.डी. बोंडे

सारांश

एकबीजपत्री अंतःप्रवर्धी रुप से उत्पन्न अपस्थानिक जड़ों को नियंत्रण में रखती है। ऐसी पर्मिनीकृत जड़ें कृत्रिम वंश *राइज़ोपामॉक्सीलॉन* गोथान, *एरोराइज़ॉस* चिताले, *वेलामेनोराइज़ॉस* बर्लिंगे एवं पराडकर तथा *हाइग्रोराइज़ॉस* त्रिवेदी एवं अन्य को निर्धारित क्रिटेशस एवं अग्रवर्ती संस्तर-स्थितियों में प्रचुरता से प्राप्त होती हैं। अब तक प्राप्त जीवाश्म जड़ें एक रूप शब्दावलियों से वर्णित नहीं हुई हैं जो कि ऊतकों की परिशुद्धता एवं परिसीमन का अभाव है। पर्मिनीकृत जड़ों के वर्णन में एक रूप शब्दावलियों की आवश्यकता पर विचार करते हुए, एकबीजपत्री जड़ों को वर्णित करने के लिए स्युबर्ट के शोध कार्य पर आधारित एक पद्धति प्रस्तावित है।

संकेत-शब्द—एकबीजपत्री, पर्मिनीकरण, शारीर, जड़ें।

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Addition to the knowledge of megafloral diversity from the Rajmahal Formation

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ABSTRACT

Pal PK, Arefin MB & Basu M 2009. Addition to the knowledge of megafloral diversity from the Rajmahal Formation. The Palaeobotanist 58(1-3): 83-91.

Specimens of *Equisetites rajmahalensis*, *Marattiopsis macrocarpa* and *Cladophlebis salicifilia* collected from Bindaban and Chunakhali areas and their previous records of Rajmahal Formation have been investigated to determine their specific circumscription. In addition, pinnately compound leaf, bearing ovate-orbicular pinnae with reticulate venation is described for the first time from the formation.

Key-words—*Equisetites rajmahalensis, Marattiopsis macrocarpa, Cladophlebis salicifilia*, Leaf type-1, Rajmahal Formation, Lower Cretaceous.

राजमहल शैलसमूह से प्राप्त गुरुवनस्पति विविधता के ज्ञान में वृद्धि

पंकज के. पाल, एम.बी. एरेफिन एवं मौमिता बासु

सारांश

बिन्दाबन एवं चूनाखली क्षेत्रों से एकत्रित *इक्वीसेटाइटिस राजमहलेन्सिस, मेराटिओप्सिस मेक्रोकार्पा* एवं *क्लेडोफ्लेबिज़ सेलिसीफिलिया* नमूने तथा राजमहल शैलसमूह के उनके पिछले अभिलेखों का उनके विशिष्ट परिलेख को निर्धारित करने हेतु अनुसंधान किया गया है। इसके साथ ही जालीदार शिराविन्यासयुक्त अंडाकार गोल पंखधारी पत्ती को इस शैलसमूह से प्रथम बार वर्णित किया गया है।

संकेत-शब्द—*इक्वीसेटाइटिस राजमहलेन्सिस, मेराटिओप्सिस मेक्रोकार्पा, क्लेडोफ्लेबिज़ सेलिसीफिलिया,* पत्ती टाईप-1, राजमहल शैलसमूह, निम्न क्रिटेशस।

The Palaeobotanist 58(2009): 93-99
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A *Teredolites* infested fossil wood from the Lower Eocene sediments of the Vastan Lignite Mine of Gujarat, western India

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ABSTRACT

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The Vastan Lignite Mine, situated about 30 km northeast of Surat in Gujarat, preserves a fairly continuous record of near shore lignites interbedded with lagoonal and open marine sediments bearing foraminifera and molluscs. This paper reports a teredo-infested fossil dicotyledonous wood belonging to Family Meliaceae from the carbonaceous shale sequence near the top of the Lower Eocene section. The wood is well preserved and shows resemblance with the extant woods of the genus *Aglaia* Lour. The presence of wood suggests a fluvial transport from its natural habitat of an inland moist tropical forest to a nearby coastal region. The profuse infestation of the wood by teredos further indicates considerable exposure before burial probably in a near shore lagoon or tidal flat area where it was bored by *Teredolites*.

Key-words—Fossil wood, *Aglaia*, Meliaceae, *Teredolites* (Ichnofossil), Eocene, Gujarat.

पश्चिमी भारत में गुजरात की वास्तन लिग्नाइट खदान के निम्न ईओसीन अवसादों से प्राप्त *टेरेडोलाइटीज* - ग्रसित अश्मित काष्ठ

जे.एस. गुलेरिया, अशोक साहनी, अनुमेहा शुक्ला एवं हुकम सिंह

सारांश

गुजरात में सूरत के 30 किमी. पूर्वोत्तर में स्थित वास्तन लिग्नाइट खदान फोरैमिनिफेरा एवं मोलस्क धारी अनूपीय व खुले समुद्री अवसादों से अंतरास्तरित तट समीप लिग्नाइटों के सतत् अभिलेख बनाए रखती है। इस शोध-पत्र में निम्न ईओसीन अनुभाग के उपरीय कार्बनमय शेल अनुक्रम से प्राप्त टेरेडो (जंतु वंश) से ग्रसित मिलिएसी कुल के द्विबीजपत्री अश्मित काष्ठ का वर्णन किया गया है। यह काष्ठ सुपरिरक्षित है तथा *एगलेया* लोर. वंश की मौजूद काष्ठों से समानता प्रदर्शित करता है। काष्ठ की उपस्थिति अंतर्देशीय आर्द्र उष्णकटिबंधीय वनों को इसके प्राकृतिक आवास से समुद्रीय क्षेत्र के निकट तक से नदीय वाहन प्रस्तावित करती है। टेरेडोज द्वारा काष्ठ का प्रचुर ग्रसन संभवतः समुद्र तट के निकट या ज्वारीय समतल क्षेत्र में दफन होने से पूर्व महत्वपूर्ण अनावरण के संकेत करता है जहाँ यह *टेरेडोलाइटीज* द्वारा दफन हुआ था।

संकेत-शब्द—अश्मित काष्ठ, *एगलेया*, मिलिएसी, *टेरेडोलाइटीज* (इक्नोफ़ॉसिल), ईओसीन, गुजरात।

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Report

Conference on Plant Life Through The Ages

The Conference on Plant Life Through The Ages organized by Birbal Sahni Institute of Palaeobotany and the Palaeobotanical Society from November 16th-17th, 2008 at Lucknow and was inaugurated by Mr D.K. Pande, Director Exploration, Oil & Natural Gas Corporation Limited. Chairman of the Organizing Committee Dr N.C. Mehrotra, Director, Birbal Sahni Institute of Palaeobotany and President, Palaeobotanical Society welcomed the guests. Dr A.K. Srivastava, Organizing Secretary of the Conference and Secretary of the Palaeobotanical Society introduced the themes of the Conference. One of the senior most palaeobotanists of the country Dr R.N. Lakhanpal, Founder Member of the Birbal Sahni Institute of Palaeobotany and the Palaeobotanical Society blessed the organizers for the success of Conference. Prof Ashok Sahni, INSA Senior Scientist, Geology Department, Panjab University, Chandigarh presided over the function and delivered the Presidential Address on Indian Raft: On Collision Course. Prof De-Yuan Hong Academician and Head of the Chinese Delegation presented his views about the Palaeobotanical researches being carried out in China and extended profuse greetings on behalf of the Chinese delegation.

There was overwhelming response from all over the country to attend and participate in the conference. Contributions from outside the country were also received. The Conference was organized under 15 themes and there were 8 Oral and 2 Poster Sessions. More than 140 research contributions from 160 delegates representing different colleges, universities, research institutes and industrial organizations and UNESCO South Asia office and US-India Educational Foundation, New Delhi were delivered during two days deliberation.

Special Session on Fossil Fuel

Prof Robert Spicer of Department of Earth Sciences, Open University, Keynes, U.K. presided over the special session on Fossil Fuel, the session was especially designed to discuss the importance of Palaeobotanical researches in the exploration of fossil fuel, i.e. oil and coal. For the first time in the platform of Palaeobotany the representatives of two big industrial organizations, Oil and Natural Gas Corporation Limited and Western Coalfields Limited came together to present their views on the Relevance of Palaeobotany in Fossil Fuel Exploration. Mr D.C. Garg Chairman-cum Managing Director of Western Coalfields Limited inaugurated the session and Mr D.K. Bhowmik, Executive Director and Head, Keshav Dev Malaviya Institute of Petroleum Exploration, ONGC discussed the application of palynology in dating the oil-bearing strata. The Key Note Addresses delivered by the delegates of ONGC and WCL on the significance of Palaeobotany in the exploration of Coal Bed Methane and Hydrocarbon potentiality in India illustrate that Palaeobotany is in motion to play a dynamic role in fossil fuel industry. Prof Robert Spicer discussed the significance of plant fossils in climatic interpretation and need to protect the fossils in natural condition.

Academic Session

Conference proceedings dealt in detail the classic and fundamental aspects of Palaeobotany, i.e. morphology, taxonomy, origin, evolution, survival, extinction and continuation of plant characteristics through their extinct and extant representatives. The conference discussed the antiquity of life, significance of coal forming vegetation, coal characteristics, giant gymnosperms of Mesozoic, emergence and evolution of Angiosperms, Quaternary vegetation and forest history, palynology and palynostratigraphy of different sedimentary basins of India, micropalaeontology and sea level changes and palaeoethnobotany and dendrochronology.

Themes were also aligned to include the modern and relevant topics of the competitive world of science like the biotechnological advancement, insect-plant interaction, microbial association and factors

responsible for the disturbance of present and past ecosystem dynamics.

The impact and significance of the conference can be recognized with the fact that number of research scholars, students and their senior professors attended the conference only to know the latest trend in the Palaeobotanical researches and to advise the young generation to take up the Palaeobotany as career and to popularize the discipline at university and college levels. Prof Manju Banerjee of Botany Department, Calcutta University presided the Valedictory Session and highlighted the immense potentiality of Palaeobotany.

During the conference Birbal Sahni Institute of Palaeobotany and the Palaeobotanical Society as responsible custodian of Palaeobotanical researches in India and abroad decided to get reaction from palaeobotanists, experts of related disciplines, academicians and research oriented industries about the Relevance of Palaeobotany in modern context and encouraging responses were received to make the Palaeobotany exciting in the modern world of Science.

Outcome of the Conference

Contributions on different aspects of Palaeobotany highlighted the vibrant and dynamic characters of Palaeobotanical researches in tune with the modern disciplines of science.

The participation of high officials of ONGC and WCL signifies the role of Palaeobotany in prognostication and hypothecation of Coal Bed Methane in different coalfields and in understanding the hydrocarbon potentiality in the oil bearing strata.

The records of well preserved plant fossils with different morphotypes and relationship advocate the need to undertake field work and to discover plant fossils from new areas.

The morphotaxonomical study of plant fossils is useful to understand the evolution, biostratigraphy and climatic interference of past and present floras.

It was suggested to provide technical knowledge to protect and preserve the fossils and fossiliferous sites in different parts of the country.

The suggestion to have University-Institute Interactive programme was appreciated for the dissemination of Palaeobotanical knowledge at university and college levels.

A.K. Srivastava
Organizing Secretary
Conference on Plant Life Through The Ages