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**THE X INDIAN COLLOQUIUM**

**ON**

**MICROPALAEONTOLOGY AND STRATIGRAPHY**

**DECEMBER 21-23, 1982**

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Department of Geology and Palaeontology,  
Maharashtra Association for the Cultivation of  
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# **X INDIAN COLLOQUIUM ON MICROPALAEONTOLOGY AND STRATIGRAPHY (1982)**

**December 21-23, 1982**

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# **ABSTRACTS**

**I**

**PRECAMBRIAN  
PALAEOZOIC and  
GONDWANA SEQUENCE**

**II**

**MESOZOIC**

16. **A Lower Ladinian Conodont Guide Form from the Kalapani Limestone (Formation), Malla Johar Area, Uttar Pradesh Himalaya**

**Prem N. Agarwal and S. Kumar**

Department of Geology, Lucknow University, Lucknow 226 007

The paper records, describes and illustrates an important Lower Ladinian conodont guide form, **Gondolella pseudolonga** Kovacs, Kozur and Mietto, from the Kalapani Limestone (Formation), Malla Johar area, Uttar Pradesh Himalaya.

17. **Observation on the Biostratigraphic Zones of the Trichinopoly Group (Upper Cretaceous), Tamil Nadu**

**K. Ayyasami and B. R. Jagannatha Rao**

Geological Survey of India, Hyderabad 500 001

The biostratigraphic classification for the South Indian Cretaceous Formations was first attempted by Kossmat, wherein he divided the Utatur Group into three, the Trichinopoly Group into two and the Ariyalur Group into three faunal subdivisions. In the Trichinopoly Group, the strata yielding **Pachydiscus** of the group **P. peramplus** with **Trigonoarca trichinopolitensis** and **Protocardium hillanum** formed the lower part shown equivalent to Turonian. **Placenticerias tamulicum**, **Schloenbachia dravidica**, **Heteroceras indicum** and **Fasciolaria rigida** of the upper division were assigned to Lower Senonian. Later, Sastry, Rao and Mangain proposed a three fold zonation for the Trichinopoly Group based on field studies and further collections. The ammonite **Lewesiceras vaju** Stoliczka was designated to represent the lower zone assigned to be from Middle to Upper Turonian. A middle **Kossmaticeras theobaldianum** Zone equivalent to Coniacian and an upper **Placenticerias tamulicum** Zone equivalent to Santonian were also proposed for the Trichinopoly Group. Based on their revision of the placenticeratid ammonites, Chiplonkar and Ghare (1979) preferred two fold zonation of Kossmat to the three fold zonation of Sastry *et al* for the Trichinopoly Group.

A detailed study of additional collection of ammonite and other invertebrate fossils has revealed :

- ( 1 ) that **Lewesiceras vaju** is of restricted distribution at the basal part of the Trichinopoly Group, with which the other associated ammonites are :  
**Romaniceras ornatissimum**, **Pachydesmoceras pachydescoides**, **P. denisonianum**, the last two ranging into younger beds.
- ( 2 ) the **Lewesiceras anapadense** has wider stratigraphic and geographic distribution, in addition to which the following ammonite species are found :  
**Proplacenticerias tamulicum**, **Romaniceras medicottianum**, **Nowakites jimboi**, **Kossmaticeras pachystoma**.
- ( 3 ) The following ammonites recorded from **Lewesiceras vaju** Zone by Sastry *et al* are found only in the younger biozones of the Trichinopoly Group :  
**Nowakites jimboi**, **Pseudojacobites anapadense**, **Mesopuzosia indopacifica**, **Puzosia orientale kossmati** and **Puzosia sp. cf. gaudama**.

In view of these findings, a revised biozonation of the Trichinopoly Group is recommended.

#### 18. Shell Wall Structure of Terebratulinae Brachiopods from South Indian Cretaceous Deposits

S. A. Aziz

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The shell wall structure of two brachiopod genera, viz., **Concinnithyris** Sahni and **Euidothyris** Buckman belonging to subfamily Terebratulinae and coming from Ariyalur Group of South Indian Cretaceous deposits are studied with the help of SEM photographs.

These genera show distinct variations in size and shape of punctae, arrangement of calcite crystals in orthodoxy secondary layer with respect to long axis of the shell, and differential development of layers.

The genus **Concinnithyris** Sahni, has hard shell wall which exhibits triple stratification whereas **Euidothyris** Buckman exhibits quadra stratification.

Sections perpendicular to the long axis of the shell are also studied to note the branching pattern of caeca.

#### 19. Some Additional Fossil Algae from the Nimar Sandstone, Bagh Beds, Madhya Pradesh

R. M. Badve and K. K. Nayak

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Present communication brings out a varied and rich assemblage of fossil algae from sandy limestone developed towards the top of Nimar Sandstone at Pipal Dehla (22° 47' N 74° 37' E). These species are shared by Cyanophyceae, Corallinaceae and Desycladaceae. They are **Cayeuxia chipionkari** n. sp., **Archaeolithothamnium feddeni** Chiplonkar and Borkar, **A. feddeni** Chiplonkar and Borkar var. **bhadukaensis** Chiplonkar and Borkar; **Acicularia spherica** n. sp., **Cymopolia brevicaulia** n. sp., **Lithoporella brevistila** n. sp., **Neomeris pfenderae** Konishi and Epis, **N. circularis** n. sp., and **Neomizzia multiramosa** n. sp.

This algal assemblage indicates shallow marine waters of tropical region, a fact already established on the basis of a rich halimeden flora from the top of Nimar Sandstone of Bagh Beds.

#### 20. Morphological Observations on Conodonts of OTOCERAS Bed of Himalaya

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The paper deals with the morphology of the conodont elements recovered from **Otoceras** Bed of Lilang section (Spiti), Shalshal Cliff section (Kumaun), Tangze section (Zaskar) and Guryul Ravine section (Kashmir) of the Tethyan Zone of Himalaya. The conodont elements described in the paper include the species of **Gondolella** and **Anchignathodus**.

The association of the species of *Gondolella*, viz., *G. orientalis*, *G. subcarinata* and *G. deflecta* in the conodont microfauna of *Otoceras* Bed of Spiti, Kumaun and Zaskar indicates a latest Permian age. From the *Otoceras* Bed of Guryul Ravine, Kashmir, the recovered association in abundance of *Anchignathodus typicalis*, *A. parvus* and *A. latidentatus* in the assemblage of conodont microfauna points to a different fossil facies than in Spiti, Kumaun and Zaskar, which may be related to palaeoecological factors.

## 21. Nannoplankton Evidence of Turonian Transgression along Narmada Valley, India

Syed A. Jafar

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The marine Cretaceous rocks of Narmada valley are synchronous facies equivalents of a single stroke and short lived transgressive event of late Turonian age, which coincided with late Cretaceous spread of epicontinental seas on a global scale. Critical evaluation of age diagnostic vertebrate, invertebrate and microfossils earlier reported from different levels support an age not younger or older than Turonian.

31 species of Calcareous Nannoplankton are recorded from the upper calcareous part of Nimar Formation exposed in sections about 100 km. apart viz., Chikli and Sitapuri. Turonian-Coniacian Stage Stratotypes are discussed in the context of integrated Planktonic Foram-Nannoplankton datum levels; in view of virtually barren nature of type Coniacian, a Hypostratotype for recognizing Turonian-Coniacian boundary should be chosen, preferably in continuous Dyr el Kef section of Tunisia; it is suggested to demarcate the base of Coniacian by the first appearance of cosmopolitan Nannoplankton *Marthasterites furcatus*. The Nannoplankton assemblage of Nimar Sandstone can be assigned to *Eiffellithus eximius* Zone of Manivit *et al.* (1977), which is of late Turonian to early Coniacian in age; however, in view of the suggestion proposed herein, a precise late Turonian age is demonstrated. The high diversity and low frequency of recorded Nannoplankton taxa can be partly ascribed to bad preservation, but mainly to the ecological stress of an estuarine complex, in which the sediments were laid.

Due to limited thickness, lack of overburden and oxidation of organic residues, the Narmada Group of sediments offer little prospects for Hydrocarbons.

## 22. A Record of Micromolluscs from the Triassic Formation of Kuti and Kalapani Area, Kumaun Himalaya, Uttar Pradesh

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The paper gives the systematic description of a large number of micromolluscs (juvenile forms) represented by gastropods, pelecypods and cephalopods, recovered from the fossiliferous limestone bands of Early Triassic and Middle Triassic sequences exposed in Kuti (30° 18' 30" : 80° 45' 45") and Kalapani (30° 13' 40" : 80° 55' 30") sections (in Byans area) of Kumaun Himalaya, Uttar Pradesh. The microfauna, which ranges in size from 1 mm to 0.5 mm includes *P'ouromya* sp., *Astarte* sp., *Megalodon* sp., *Pleurotomaria* sp.,



*Bellerophon* sp., *Euomphalus* sp., *Syringonutilus* sp., *Ceratites* sp. An increase in frequency of occurrence of micromolluscs in Early Triassic ( Smithian-Spathian ) to Middle Triassic ( Lower Anisian ) horizons and corresponding change in lithology is suggestive of a change in depositional environments during that transitional period.

### 23. Planktonic Foraminifera from Bagh Beds, Madhya Pradesh

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Planktonic foraminifera, hitherto unknown from the Bagh Beds, are being reported here. They include *Platystaphyla brazoensis* ( Martin ), *Guembilitria cenomana* ( Keller ) and ? *Planoglobulina* sp., and are recovered from a marly patch developed at the top of the Upper Coralline Limestone at Badia ( Baria ), Madhya Pradesh. Of these, the one described here under the genus ? *Planoglobulina* may perhaps be a new genus since the addition of globular chamber is in a plane other than the one containing rest of the chambers of the test. In addition, the top view shows oblong outline instead of circular. However, creating a new genus is deferred for want of more material.

### 24. Biostratigraphy and Environmental Setting of Wadhwan Limestone, Surendranagar District, Gujarat

Liaqat A. K. Rao, Mohd. Aslam, Abrar Ahmad, Mohd. Ajmal and Syed Ahmad Ali

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The Wadhwan group ( Lower to Middle Cretaceous ) with a thick fossiliferous limestone has posed stupendous problems in the understanding of its biostratigraphy and environmental setting. The present study reveals that Wadhwan Limestone is composed of **Bryozoa, Corals, Gastropoda** and **Algae**, cemented in silicified calcareous matrix. Based on the above mentioned fossil assemblages of Wadhwan limestone the authors propose four distinct biostratigraphic units viz; ( I ) **Bryozoa** assemblage zone, characterised by the presence of the following species, namely, *Eritalophora*, *Ceripora*, *Membranipora*, *Spiropora*, *Fscharinella*, *Lunulites*, *Filicrisina*, *Eobosaecia*, *Dictuonia*, *Flustrillaria*, *Conopeum* and *Planicellaria*. ( II ) **Corals-Stephanocoenia**, *Trochocyathus*, *Striphanosmia* and *Astrocoenia*. ( III ) **Gastropoda** *Turritella* and *Cerethium* and ( IV ) **Algae-Archaeolithothamnium** and *Solenopora*.

It is therefore, suggested that the proposed biostratigraphic units may be utilized for local as well as regional correlation and evidently reflect the specific variation in paleoenvironmental conditions.

### 25. Some Miogypsins from the subsurface samples of the cauvery basin, Thanjavur district, Tamil Nadu

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An attempt has been made, using Drooger's techniques, to study the miogypsinids found occurring in the sub-surface samples of Vedaraniyam locality ( N 10° 22', E 79° 51' ) in the Thanjavur district of Tamil Nadu State.

About three to four species of miogypsinids age are encountered. Their associations of Mioceda with the other larger foraminifera indicate Lower Miocene age.

## 26. The Cryptic Krols

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The Król Formation extends widely as a major lithostratigraphic unit in the Lesser Himalayas. These sediments have been variously dated based on piecemeal field observations and sporadic fossil records. This diversity resulted to a source of absolute confusion in ascertaining the geological setting exposed below the fossiliferous Tertiaries in the region. A rich assemblage comprising spores, pollen grains and radiolarians has been recovered from the Member 'B' of the Krol Formation of the Garhwal Himalaya. The biota indicates a definite Jurassic age. The environment of deposition and the age of the Krol Formation are discussed in the present paper in the light of available palaeontological data.

## 27. BERGAUERIA Prantl from Cretaceous Rocks of Madhya Pradesh

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The paper describes *Bergaueria* Prantl from Upper Cretaceous rocks of Narbada Group. The forms are associated with oyster beds and crab burrows indicating shallow environment of deposition.



## LATE ABSTRACTS

### 81. Late Quaternary Microfossils and Stratigraphy of Littoral Deposits Around Bombay

M. D. Kajale, S. N. Ghate and S. N. Rajguru

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Late Quaternary stratigraphy of the coastal belt around Bombay ( 18° 58' N 72° 50'E ) and pollen analysis of the fossil tidal flat and modern tidal deposits is being reported. Area covered lies between Arnala and Bassein, about 42 km north of Bombay and the terrain between Alibag and Reydanda, about 33 km south of Bombay. Our multidisciplinary studies have brought to light following stratigraphic features.

- ( 1 ) Terminal Pleistocene deposits—Kankary alluvial gravels and clays unconformably resting on the Deccan trap.
- ( 2 ) Early Holocene deposits represented by the greyish-blue silty clays with subfossil woods, shells, tubules of burrowing animals alternating with marine sands, mottled clays and peatlike facies.
- ( 3 ) Middle Holocene deposits represented by the beach rock locally known as ' Karal ' alternating with marine sands.
- ( 4 ) Archaeological deposits—Highly disturbed habitational deposits resting on Karal. It yields remains belonging to the Early Historical and Late Historical periods.
- ( 5 ) The existing active creek at Purapada with sand flat, tidal flat and mudflat depositional sequence from top to bottom.

The rich wealth of microfossil assemblage from Nirmal and Purapada includes fungal spores, pteridophytic spores, monoporate pollens, tricolpate and tricolporate pollen belonging to different dicotyledonous families, polyporate pollens, tetrads, polyads and pollens assignable to various families such as Compositae, Rhizophoraceae, Acanthaceae, Myrtaceae, Euphorbiaceae, etc. Microforaminifera are observed in the deposits collected from both the localities.

Our studies suggest that the sea level was fairly low by about 20 m below the present sea level during the terminal Pleistocene period. It started rising subsequently and reached its present level during the middle Holocene period as is indicated by the 14C date of 5220 ± 100 B. P. from a lake at Gas. Karal rock is formed in different periods right from the terminal Pleistocene to the late Holocene periods. From middle Holocene onwards sea level has fluctuated within an amplitude of 1 to 1.5 m in the terrain north of Bombay. There was a creek flowing along the west-east-northeast alignment of the present day lakes during the Holocene period in the area north of Bombay. Fossil pollens, spores and microforaminifera are being studied from the point of view of demarcating marine and nonmarine ( alluvial ) facies, vegetational and ecological changes during the late Quaternary period.

## 82. Upper Cretaceous Palynoflora from Meghalaya, India

Bharati Nandi and A. K. Ghosh

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A well preserved palynoflora is recovered from the Upper Cretaceous sedimentary sequences of Khasi Hills. The microflora shows the dominance and diversity of angiosperm pollen followed by pteridophyte spores, gymnosperm pollen are less abundant. The association of microplanktons with the spore-pollen assemblage is significant.

Numerical analysis of the palynomorphs has assisted in the establishment of six biozones. The assemblage indicates that the swampy, mangrove vegetation prevailed, influenced by tropical, warm, humid to nearshore environmental condition. Gymnospermous evidence is indicative of raised topography near the depositional basin. Changes in the microfioral composition reflects upon the hypothesis of oscillation of the shoreline during the deposition of the sediments.

## 83. Palynological Assemblage of Lignitic Exposure of Ratnagiri District.

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Botany Research Laboratory, Ramnarin Ruia College, Matunga, Bombay 400 019.

Palynological assemblage of lignitic exposure in a well section at Golap, IIIrd Dharma-shala Stop on Ratnagiri Pawas Road is presented. The palynoflora is represented by 140 species belonging to 96 genera.

Fungi, Pteridophytes and Angiosperms are the groups represented.

Dicotyledonous pollens dominate the palynoflora. The assemblage indicates more warm, humid past climate and estuarine depositional environment.

## 84. Taxonomic Notes on Some Genera of Foraminiferal Family

Cibicididae Cushman, 1927.

Bhalla,<sup>1</sup> S. N. and Dev<sup>2</sup> Pramendra

1. Department of Geology, Aligarh Muslim University, Aligarh.

2. School of Studies in Geology, Vikram University, Ujjain.

The taxonomic observations made by different workers on foraminifer genera *Planulina* D'Orbigny, *Cibicidina* Bandy and *Cibicides* De Montfort belonging to family Cibicididae Cushman, 1927 are discussed. The systematic assignment of *Planulina* and *Cibicidina* to subfamilies Planulininae Bermudez, 1952 and *Cibicides* to Cibicidinae Cushman, 1927 is being considered valid.

85. **Stratigraphy and Microfauna of The Baripada Beds ( Middle Miocene ), Orissa.**  
**Bhalla,<sup>1</sup> S. N. and Dev<sup>2</sup>, Pramendra**

1 Department of Geology, Aligarh Muslim University, Aligarh.

2 School of Studies in Geology, Vikram•University, Ujjain.

The paper presents a concise account of the stratigraphy and microfauna of the Baripada Beds, Mayurbhanj district, Orissa. These beds show good exposures in the cuttings of river Burhabalang, mainly towards south of Baripada town. The stratigraphic sections studied at four localities are described. A fairly rich assemblage of microfauna consisting mainly of foraminifera and fish remains has been recovered.

The foraminiferal assemblage is represented by thirty-five species. The family Nonionidae occurs in abundance constituting the bulk of foraminiferal fauna. The other families represented by frequent to rare specimens are Rotaliidae, Elphidiidae, Discorbidae, Cibicididae, Globigerinidae, Miliolidae, Glandulinidae, Bolivinitidae and Caucasinidae.

The fish assemblage comprises thirty species belonging to Chondrichthyes and Osteichthyes. The Chondrichthyes is in abundance and includes Selachii and Batoider. Amongst Selachii, the family Carcharhinidae occur in high frequency and is followed by Isuridae, Sphyrnidae, Hexanchidae, Alopiidae and Scyliorhinidae. Batoidea consists representatives of Myliobatidae, Pristidae, Dasyatidae and Rhinopteridae. The Osteichthyes is represented by Sphyracnidae and Trichiuridae.

The microfauna of Baripada Beds indicates rather fluctuating conditions of deposition in a shallow, near shore, marine environment. Based on the presence of wellknown marker species of planktonic foraminifera—*Orbulina suturalis* Bronnimann and several other short ranging species which are commonly known from the Middle Miocene, the Baripada beds have been assigned a Middle Miocene age.

