

DISCOVERY OF A PSEUDOTRIBOSPHENIC-LIKE MAMMAL FROM THE EARLY CRETACEOUS KOTA FORMATION, PENINSULAR INDIA

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The Kota Formation, an important lithostratigraphic unit of the Upper Gondwana Group of Pranhita-Godavari valley (India), is long known for its rich vertebrate fauna. Screen washing of four tonnes of samples from a stream section of Kota Formation, exposed about 500 m SW of Paikasigudem village, Adilabad District, Andhra Pradesh (State), has produced a microvertebrate assemblage represented by remains of *Lepidoptes*, indeterminate anurans, sphenodontids, lacertilians, crocodiles, theropod and ornithischian dinosaurs, and micromammals. At this site, two additional mammalian teeth - one triconodont and one pseudotribosphenic - like - have been recovered from the clays and mudstones intercalated with the limestone bands of the Upper Member of Kota Formation. The palynological assemblage from this mammal-bearing section indicates an Early Cretaceous (Barremian to Aptian) age. The pseudotribosphenic-like tooth exhibits an asymmetrically triangular and doubly indented crown, anteroposteriorly wide lingual cusp pushed to the posterior part of the crown, and narrow ectocingulum, resembling the upper molar morphology of the docodont *Haldanodon*. However, the absence of a crest connecting the principal labial cusp with the lingual cusp, additional cusp posterior to the lingual cusp and the presence of an anterior crest connecting paracone and anterolabial cusp B do not favour its inclusion in docodonts. In having the last mentioned feature along with relatively widely spaced labial cusps, an expanded parastylar region with a small parastyle cusp, and narrow labial cingulum, the new specimen is also comparable to *Shuotherium shilongi*, a pseudotribosphenic mammal from the Upper Jurassic of China. But the asymmetrical crown with a posteriorly placed, anteroposteriorly wide lingual cusp and the double pinching of the crown lingual to the labial cusps is not characteristic of tribosphenic upper molars. Therefore, the new mammalian tooth from India might represent a yet unknown early mammalian lineage.

HYPOTHETICAL SCENARIO FOR THE MIDDLE JURASSIC IN THE SOUTHERN PART OF THE NEUQUEN BASIN, ARGENTINA

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Hypothetical scenario for the Middle Jurassic, in the southern part of the Neuquen Basin, is proposed according to sedimentary facies and palynological data provided from the study of eight stratigraphic sections. During the Middle Jurassic in the study area, the Los Molles, Lajas and Challaco Formations of Cuyo Group constitute an overall prograding system deposited in a distal to shallow marine deltaic environment, with correlative fluvial deposits. The marine environment was characterized considering their sedimentary facies and paleomicroplankton content (30 species). The analysis of the terrestrial palynological assemblages (102 species of sporomorphs) shows that some plant groups dominated the scenario, such as the Cheirolepidiaceae, Marattiaceae, Dipteridaceae, Lycopodiaceae, Schizaeaceae,

Anthocerotaceae, Ricciaceae, Cycadales/Bennettitales, Caytoniaceae and Gnetales. In addition to the conventional approach using percentage values, principal component proves to be an excellent and complementary tool in the way that they reduce the data set into definitive groups of representative taxa. A modern analogous (Chilean-Argentinean forest and Plant of southern Brazil) is used to explain the paleoclimatical and paleoenvironmental conditions during the Middle Jurassic. In the Planalto (about 1000 m above sea level) the Araucariaceae and Podocarpaceae grow together, but the latter disappear with an increase of temperature and humidity to the north of Brazil. The influence of acid effusives of Serra Geral Formation conditioned the low pH of the soils. In the Neuquen Basin, rhyolites of the Choyoi Group (Permo-Triassic) and other acid rocks of the basement (Colohuincul and Huechulafquen Formations) could act as the substratum of the ancient Araucariaceae. According to the above described, a scenario with plateaus, warm to temperate conditions and variable precipitation rates through the Middle Jurassic is proposed.

POST-GONDWANA PRE-ANGIOSPERM MIXED FLORA OF INDIA - AN EVOLUTIONARY NECESSITY

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The pre-angiosperm mixed flora of India is characterised by the gymnosperm dominant *Ptilophyllum* flora. This has been assigned a Early Cretaceous age. Floristic differences in various sedimentary basins has been attributed to regionalism, taphonomy and tectonics. Phytodiversity of this flora was indicated by the plants belonging to pterodophytes, pteridosperms, cycads, bennettitales, ginkgoales, pentoxylales and conifers. Abrupt end of some of these forms, intermingling of taxa from different phytochorias, habitat niche differentiation, migrational compulsions and environmental requirements dictated the composition of the flora. Conflicting age assignments are the result of insufficient data, narrow inferences, and subjectivity. Interpretation of the data on plant parts - leaf, stem, wood, spore and pollen preserved under various deposition environments resulted in a mosaic status. Sandwiched between Gondwana and Deccan volcanic floras the mixed character of the flora was an outcome of its evolution in a isolated landmass. Recent data opened new vistas in understanding evolutionary and ecological compulsions of angiosperm spread. An attempt has been made to integrate data subset and analyse analogies and anomalies in different approaches.

DICYNODONT JAW MECHANISMS RECONSIDERED: THE -KANNEMEYERIA- MASTICATORY CYCLE

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The unique feature of the dicynodont masticatory apparatus is a jaw joint consisting of two convex articulating surfaces which permitted free antero-posterior movement. This characteristic has been the foundation for the elucidation of dicynodont evolution and taxonomy by many authors. The sliding jaw hinge is viewed as the primary factor for the success of dicynodonts and critical to an understanding