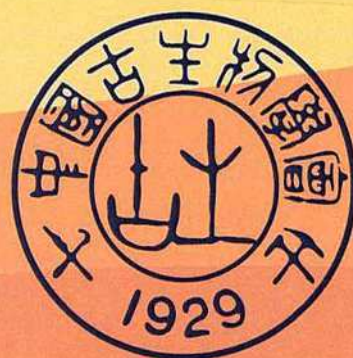
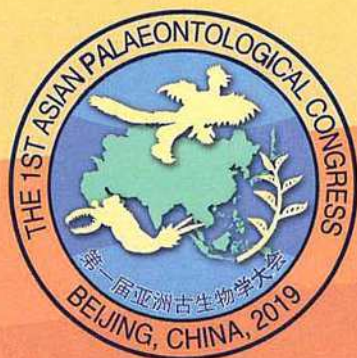


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ABSTRACTS

论文摘要集

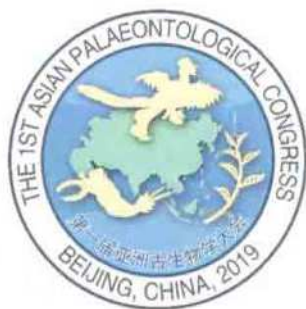
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Beijing, China



The Middle Jurassic Swamp Plant Communities of Asia

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The coal formation in the geological past was linked with the development of plant communities which produced a large biomass at the same time possessed relatively simple structure. A considerable part of phytomass was removed from swamp ecosystems and became mortmass. The coal formation involving rapid burial of plant remains has paleoecological and taphonomical significance. The coal seams are particularly subject of paleobotanical research. The study of plant material has great importance for knowledge of the composition of swamp vegetation, genesis and quality of coal. Many elements of the coal-forming plant community can still be identified in the coal. At the time of the mire formation and growth, climatic conditions were not suitable for sediment transport into the basin particularly biogenic components, with almost complete absence of clastic sediments. Therefore, it is possible to assume that plants that gave rise to the coal deposits were autochthonous and provided the first elements of peat accumulation. Since the clastic deposits represent the material transported from the provenance area, fossil plants assemblages from the terrigenous deposits between the coal layers are often mixed, consisting of elements from both the slope and lowland communities.

We have studied the Middle Jurassic coal-bearing deposits of the Kansk-Achinsk and Irkutsk basins of Eastern Siberia (Russia) and Ordos Basin (China). The coals from thick productive and thin coal seams of these basins were processed. After chemical maceration of coals, the dispersed cuticles were revealed, their taxonomic position was determined, and coal-forming plants were identified.

The coals were sampled in Pereyaslovskoe and Nazarovskoe coal mines in the Kansk-Achinsk Basin. In the former mine the productive seams are associated with the Middle Jurassic Upper Kamala Formation. Total thickness of all seams is 22 m. We revealed abundant dispersed cuticles of *Czekanowskia* spp. In the latter mine the thick coal seams occur in the Lower Itat Formation. The thickness of the productive seam is 13.8 m. Numerous cuticles of *Phoenicopsis gracilis* Samylna, *Czekanowskia* spp. and rare conifers were found in the coal seams.

The taphocoenoses of Kamala Formation are dominated by *Czekanowskia* spp. – genera *Phoenicopsis* and *Czekanowskia*. The ferns are represented by *Coniopteris*, *Cladophlebis*, *Phlebopteris*, and *Raphaelia*, the cycadales – by *Nilssonia* (1 species). The ginkgoaleans and conifers played in this flora significant role (Kostina, 2004).

The burials of plant remains in the Itat Formation are dominated by *Czekanowskia* and *Pityophyllum*. Next in significance are horsetails, ferns *Coniopteris* and *Cladophlebis*, ginkgoaleans *Ginkgo* and *Sphenobaiera*. Rarer *Phoenicopsis* occurs. Other plants are single (Samylna and Markovich, 1991).

The Middle Jurassic flora of the Irkutsk Basin comes from Prisayanskaya and Kuda formations. The remains of ferns *Raphaelia*, *Coniopteris* and *Cladophlebis*, ginkgoalean *Ginkgo sibirica* Heer, *Czekanowskia* spp. and *Phoenicopsis*, conifers are widely distributed (Frolov, Mashchuk, 2018). The maceration of coals revealed the dispersed cuticles of *Pseudotorellia*, *Phoenicopsis*, and conifers.



The coals were sampled in Wulanhada coal mine in the Ordos Basin. In this mine the Yan'an Formation (the Middle Jurassic) has productive seams; the thickness of all seams is about 16 m. The burials of Yan'an Formation are dominated by ferns *Coniopteris* and *Cladophlebis*, czekanowskialeans *Czekanowskia* and *Phoenicopsis*, ginkgoaleans *Ginkgo* and *Baiera*. Cycadales, horsetails, and conifers played important role in this flora. The coals mainly consist of leaves of *Pseudotorellia* and ferns. The conifers are rare.

Thus, we have paleobotanical evidence, that the czekanowskialeans and somewhat *Pseudotorellia* gave rise to the dominant Middle Jurassic groups of swamp plant community in the Siberian basins, while in Ordos Basin the czekanowskialeans grew on the slopes and they did not enter the swamp plant community. We can outline the main trends in the vegetation zonation during the Middle Jurassic – the abundance of the czekanowskialeans to north and loss of their significance to the southern region.

KEYWORDS: Coal-forming plants, swamp plant communities, Middle Jurassic, Siberia, Ordos Basin.

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Recent Advances in the Study of the Jurassic Feathered Dinosaur *Anchiornis* and Its Kin

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Anchiornithinae is a group of small maniraptoran dinosaurs from the Late Jurassic of northeast China and Germany. As one of the earliest known feathered animals and "four-winged" dinosaurs, they are at least 10 million years earlier than *Archaeopteryx*, which is widely regarded as the earliest known bird, and bear a closer morphological resemblance to *Archaeopteryx* than to any other known dinosaurs.

Although the anchiornithines are very similar in morphology to *Archaeopteryx*, they bear some plesiomorphic features such as relatively short forelimbs, straight ulna, small and not reversed hallux, and slender and symmetrical flight feathers, so some scholars think that they lacked flight capability and their long pennaceous feathers were for display rather than flight. However, a recent study shows that *Anchiornis* has patagia-bearing arms as in modern flight birds, hinting that the arms with the long pennaceous feathers have an aerodynamic benefit.

Recently, a new member of Anchiornithinae, *Caihong juji*, was discovered in Qinglong, northern Hebei, which also produced the fossil of the bizarre scansoriopterygid *Yi qi*. An investigation suggests the fossil-bearing