

History of the orders of winged insects

Alexandr P. Rasnitsyn

Palaeontological Institute, Russian Academy of Sciences, Moscow 118868, Russia; rasna@online.ru

The 125th anniversary of Andrey V. Martynov (1879-1938), the worldwide esteemed entomologist and the founder of the Russian palaeoentomological school, and the centenary of his successor Boris B. Rohdendorf (1904-1977), justifies this short review of some results produced recently by this school jointly with its associates.

A variety of approaches exists to reveal the history of a group of living beings through time, including the genealogical relationships of subtaxa, evolutionary scenarios dealing with the morphological, functional, ecological, and geographical changes of the subtaxa, as well as the timing of all these evolutionary events. All these approaches deserve attention and should be used whenever appropriate. However, the palaeontological data have special value, being unique in their ability both to date and sequence various evolutionary events and to display directly, even if incompletely, the past organic worlds in their diversity along with their interaction systems. Thus, the insect fossil record in its available detail, considered against the background of the entomological knowledge of its diversity and integrity, made it possible to reveal a different and rather unexpected picture of the history of the insects. The information available suggests the main distinction within the winged insects as opposing the former Polyneoptera (orthopteroid insects in the widest sense) to the rest of the Pterygota. Within the latter assemblage, the primary distinction appears to separate mayflies jointly with the dragonflies from the remaining orders, that is, from holometabolans, hemipteroids, palaeodictyopteroids, and a few minor extinct orders. The introduction of numerous other innovations of lesser generality was found necessary to balance the fossil record against other data concerning the extant and extinct winged insects.

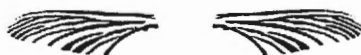
Extending ancestry: two new hymenopteran fossils from the mid-Cretaceous of southern Africa (Hymenoptera: ?Jurapriidae, Evaniidae)

Alexandr P. Rasnitsyn^{1*} and Denis J. Brothers²

¹Palaeontological Institute, Russian Academy of Sciences, Profsoyuznaya Str. 123, 117868 Moscow, Russia and Natural History Museum, Cromwell Road, London SW7 5BD, UK; rasna@online.ru

²School of Biological & Conservation Sciences, University of KwaZulu-Natal, Private Bag X01, Scottsville Pietermaritzburg, 3209 South Africa; brothers@ukzn.ac.za

The deposits at Orapa, Botswana, include several unique specimens of Hymenoptera which provide insights into relationships amongst various higher taxa, and into the probable characteristics of their ancestral forms. This paper describes two new monotypic genera and their type species. The first shows characteristics of Scelionidae (body and antennal form and some aspects of wing venation) and Chalcidoidea (form of pronotum, number of antennomeres and other aspects of wing venation), and may be a sister taxon to Chalcidoidea; it is provisionally placed in the family Jurapriidae. The second is clearly a member of Evaniidae, but shows a mixture of relatively plesiomorphic (intermediate number of antennomeres and form of mesosoma) and apomorphic (length of hind legs, wing venation and form of metasomal petiole) characters when compared with other species of the family; its placement at or near the base of Evaniidae is highly probable, but greater certainty requires additional specimens.



Fossils X 3

Programme and Abstracts

3RD INTERNATIONAL CONGRESS OF PALAEOENTOMOLOGY
with
2ND INTERNATIONAL MEETING ON PALAEOARTHROPODOLOGY
and
2ND WORLD CONGRESS ON AMBER AND ITS INCLUSIONS

7th to 11th February 2005

Pretoria
SOUTH AFRICA