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Ansorgiidae, a new family from the Upper Cretaceous of Kazakhstan (*Diptera, Ptychopteromorpha*)

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Abstract. *Ansorgiidae* fam. n., with *Ansorgia praedicta* gen. et sp. n., are described and illustrated and their phylogenetical relations are discussed; the new family shows characters linking *Tanyderidae* and *Eoptychopteridae*.

Key words: *Ansorgiidae*, *Eoptychopteridae*, *Ptychopteridae*, *Tanyderidae*, fossil, Jurassic, Kazakhstan.

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The superfamily *Ptychopteroidea*, enclosing families *Tanyderidae* and *Ptychopteridae*, was created by HENNIG (1973). In the first volume of the Manual of Nearctic *Diptera* the *Tanyderidae*, at a higher rank of a superfamily was transfered to the infraorder *Tipulomorpha* (MC ALPINE et al. 1981). This change however seemed not satisfactory to the authors and in the third volume the HENNIG's idea of combining both families in one higher taxon was again undertaken by WOOD and BORKENT (1989), who created for them the infraorder *Ptychopteromorpha*. KRZEMIŃSKI (1992), in recognition of a special position of the *Tanyderidae* in the phylogeny of the entire *Diptera*, distinguished this family as a separate infraorder and left in the *Ptychopteromorpha* the Recent *Ptychopteridae* and their direct ancestor, a fossil family *Eoptychopteridae* (known since the Upper Triassic and probably being extinct in the Lower Cretaceous).

In the Upper Jurassic materials from Karatau (Kazakhstan, south-western Asia) two males were found; their wing venation resembles both the *Tanyderidae* and the *Eoptychopteridae*. This unique set of characters (presented below) deserves separating them in a new family, *Ansorgiidae*. However, the absence of a long, radial vein R_2 terminating in the costa (characteristic for the *Tanyderidae*) allows to place the new family in the infraorder *Ptychopteromorpha*, together with the *Ptychopteridae* and *Eoptychopteridae*.

SYSTEMATIC PART

Ansorgiidae fam. n.

Diagnosis. Four long, radial veins terminating in wing margin present (i.e., long R_2 is absent); *Rs*, R_{4+5} and R_4 form one straight line; M_4 2.5 times as long as M_{3+4}; cross-vein *m-cu* originates in midth of M_{3+4}.

Type genus: *Ansorgia* gen. n., Upper Jurassic (Karatau, Kazakhstan).

Ansorgia gen. n.

Diagnosis of the new genus and the new species is covered by that of the family.

Origin of name: the new genus and family name is dedicated to dr Jörg ANSORGE, the geologist from Germany, specializing in fossil insects.

Ansorgia praedicta sp. n.

Origin of name: *praedicta* = predicted (foreseen), points to the phylogenetical proximity of the *Ptychopteridae* and the *Tanyderidae*, intuitively presumed by HENNIG and other authors and proved by the old, Jurassic species described here.

Description. Body ca. 6 mm long, wing 5 mm long.

Head: antennae partially preserved, flagellomeres narrow and cylindrical; only some fragments of palpi visible.

Wing (Fig. 1): *Sc* visible in its terminal part, reaching beyond cross-vein *r-m*; cross-vein *sc-r* invisible, probably absent; *Rs* short, three times shorter than R_{4+5}; R_2 invisible, probably absent; R_{4+5} and R_4 positioned in direct, straight prolongation of *Rs*; R_5 arcuated in its first section originating from R_{4+5}; cross-vein *r-m* just before midth of *d* cell upper part, which is as long as M_2; M_3 three times as long as M_{3+4}; cross-vein *m-m* placed between M_2 and M_3, in the midth of the latter vein; anal field hidden under the abdomen and hence invisible.

Legs without tibial spurs. Abdomen broad, slightly shorter than the wing.

Male hypopygium well preserved (Fig. 2), distinctly more narrow that the abdomen; some structures resemble the "surstyli" in the genus *Proptychopterina* KALUGINA (*Eoptychopteridae*).

Material examined: Holotype No. 2784/114, paratype No. 2784/410(+) and No. 2784/428(-), both from Karatau (Kazakhstan, Central Asia), Upper Jurassic. Housed in the Paleontological Institute, Russian Academy of Sciences, Moscow.

Discussion: *Ansorgiidae* fam. n. – an extinct link between *Tanyderidae* and *Ptychopteridae*.

The specimens representing the new family exhibit the following wing venation characters of the *Tanyderidae* (Fig. 3):

1. Veins *Rs*, R_{4+5} and R_4 form one straight line; R_5 is positioned definitely below it.

2. The cross vein *r-m* is placed between R_5 and M_{1+2}.

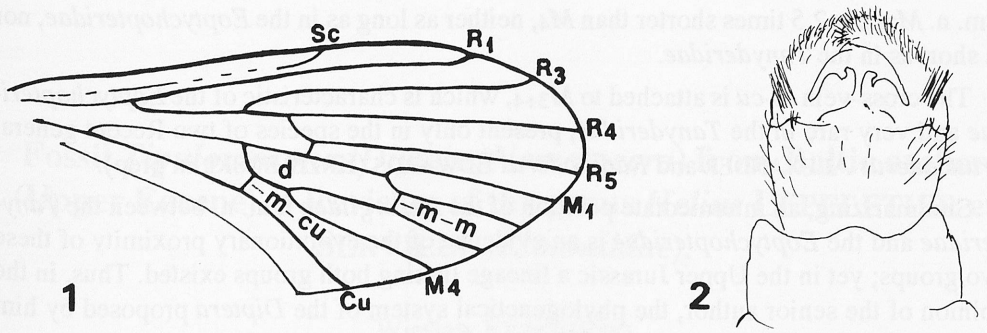

Fig. 1-2. *Ansorgia praedicta* sp. n., holotype (*Ansorgiidae* fam. n.): 1 – wing, 2 – hypopygium.

3. The vein M_4 is very long when compared to M_{3+4}.

The characters of the *Ansorgiidae* fam. n. which are shared by the *Eoptychopteridae* (Fig. 4), are as follows:

1. Long, radial vein R_2 absent.

2. Cross-vein *m-cu* attached to M_{3+4} and *Cu*.

3. Male hypopygium resembles that of *Proptychopterina* (*Eoptychopteridae*).

Unfortunately, in both specimens examined a very important character, the cross-vein *sc-r*, is invisible. In the *Tanyderidae* this vein is characteristically and uniquely to the group placed at the end of *Sc*, while in the *Eoptychopteridae* it is always absent. We can only state that in the *Ansorgiidae* fam. n. the *sc-r*, if present, is not positioned at the end of *Sc*, since only the terminal section of this vein is retained.

Concerning the vein *r-r*(R_2), in the well preserved radial field neither a long R_2, nor any cross vein between R_1 and R_3 could be found.

The vein M_{3+4} is equal to M_4 or even slightly longer in the *Eoptychopteridae* while in the *Tanyderidae* this vein is very short, ca. four times shorter than M_4. In the *Ansorgiidae*

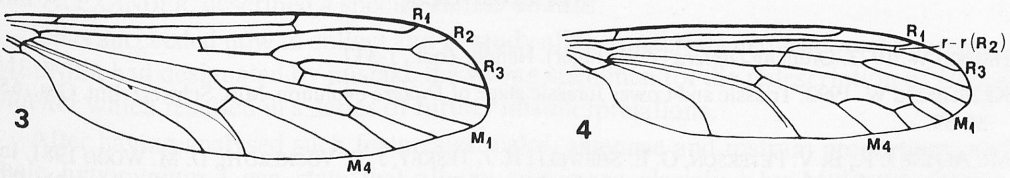

Fig. 3-4. Wing venation: 3 – *Tanyderidae* (*Praemacrochile* sp.), 4 – *Eoptychopteridae* (*Proptychoptera* sp.)

fam. n. M_{3+4} is 2.5 times shorter than M_4, neither as long as in the *Eoptychopteridae*, nor as short as in the *Tanyderidae*.

The cross-vein *m-cu* is attached to M_{3+4}, which is characteristic of the *Eoptychopteridae* and very rare in the *Tanyderidae*, present only in the species of two Recent genera, *Araucaderus* ALEXANDER and *Radinoderus* EDWARDS (KRZEMIŃSKI, in prep).

Summarizing, an intermediate position of the *Ansorgiidae* fam. n. between the *Tanyderidae* and the *Eoptychopteridae* is an evidence of the evolutionary proximity of these two groups; yet in the Upper Jurassic a lineage linking both groups existed. Thus, in the opinion of the senior author, the phylogenetical system of the *Diptera* proposed by him (KRZEMIŃSKI 1992) has gained a further support.

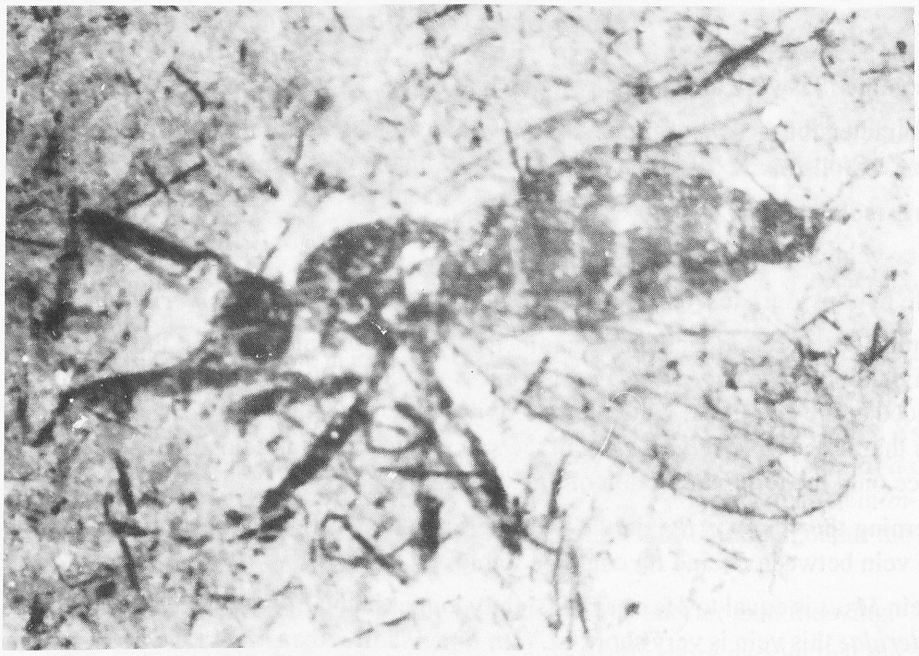

Plate I. *Ansorgia praedicta* sp. n., holotype.

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