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A FOSSIL INSECT FROM THE DWYKA SERIES OF RHODESIA

by

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ABSTRACT

Hadentomoides dwykensis, gen. et sp. nov. (Paraplecoptera: Hadentomidae) is the oldest recorded insect in the southern hemisphere. It is similar to *Hadentomum americanum* from the Upper Carboniferous of North America. The close relationship between these two species tends to support the view that at least part of the Dwyka Series extends below the Permian into the Upper Carboniferous.

INTRODUCTION

The oldest insects hitherto described from the southern hemisphere are recorded from the Permian: none are recorded from the older, Upper Carboniferous, strata. The only extensive Permian fauna is that at Belmont, Australia, in sediments of Upper Permian age (Riek, 1968). A fauna of similar age (Middle Beaufort) is known to occur in South Africa (Riek, in press), and one of slightly older age in South America (Pinto, 1972b). Single species or limited faunas, comparable in age with these Upper Permian faunas, are recorded from Madagascar, the Falkland Islands (Tillyard, 1928) and Argentina (Pinto, 1972a). Handlirsch (1906—8) described a blattid from Kashmir: it was associated with a *Glossopteris* flora, and on this basis he inferred a Permian age for the species. Zeuner (1955) described a blattid, *Rhodesiomylacris bondi,* from the Lower Beaufort Series in Rhodesia, and Pruvost (1934) described a paraplecopteron, *Boutakovia salei,* from the base of the Ecca, the Series below the Beaufort, in the Democratic Republic of the Congo (formerly the Belgian Congo).

This paper records an insect from the Dwyka Series of Rhodesia. The Dwyka lies below the Ecca. The Series lies at the base of the Permian or top of the Upper Carboniferous or may extend across the time barrier between these two periods. As far as can be ascertained from the sometimes indefinite correlations between the freshwater sediments of the southern continents, this species from the Dwyka is apparently the oldest recorded insect in the southern hemisphere.

The single specimen was recovered from a bore core.

The species, represented by the well preserved apical half of a fore wing, is referred to the Paraplecoptera, the order that, almost certainly, forms the base order of the Neoptera. The wing venation is generalized, without fusions between any of the main veins. The archedictyon is partly reduced in this species but definitive cross veins have not developed from the irregular network.

SYSTEMATICS

ORDER PARAPLECOPTERA

FAMILY HADENTOMIDAE

The family is recorded from the Upper Carboniferous of North America. Carpenter (1965) synonymized this family, and the Palaeocixiidae, with the Protoperlidae, but the median field is more branched and the first branching is earlier in the Protoperlidae, including Palaeocixiidae, than in the Hadentomidae. The cross veins are irregular and tend to form a double row of cellules between the main veins, as in many Idelioidea, but the venation is relatively open. The unbranched vein in the middle of the wing is apparently the upper branch of M. CuA has several short apical branches directed to the posterior margin, as in Protoperlidae and Protembiidae.

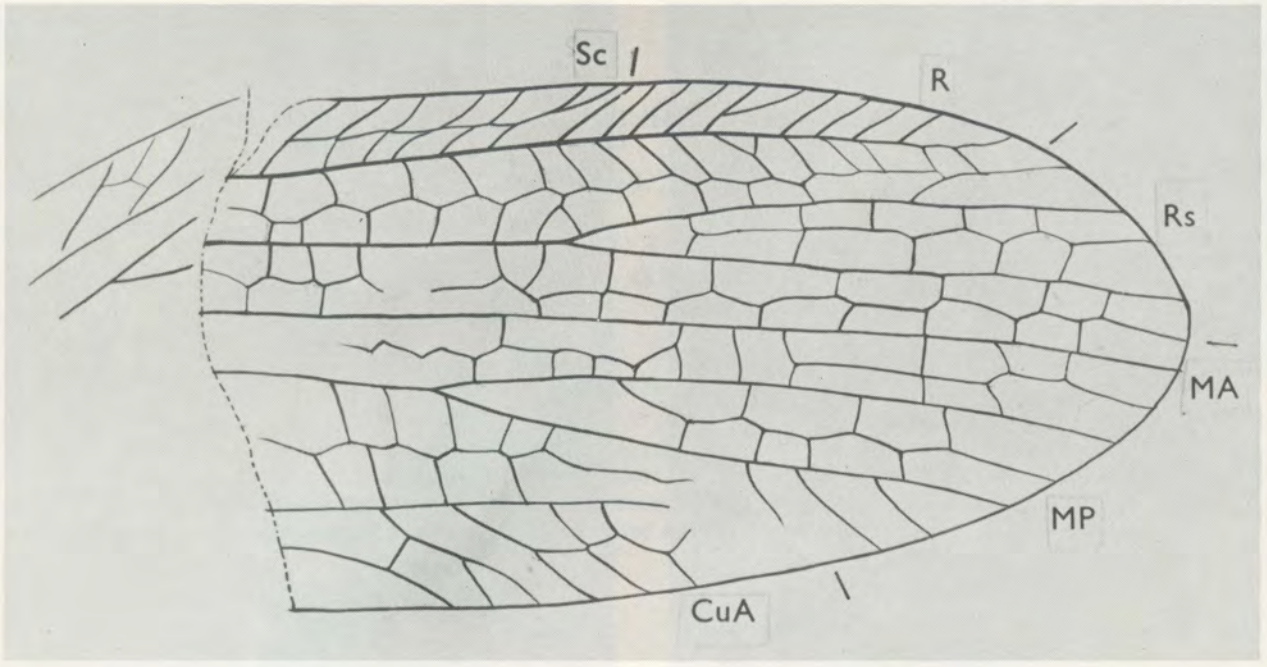
Genus *Hadentomoides* gen. nov.

Derivation: Hadentomoides = similar to *Hadentomum.*

Type species: Hadentomoides dwykensis sp. nov.

Diagnosis: Similar to *Hadentomum* but with a double row of cellules between all veins, at least in the apical (preserved) half of the wing. Rs 2-branched. M 3-branched, with terminal pectinate twigging on the posterior branch.

The genus resembles *Hadentomum* to a marked extent, and some of the apparent differences may be due to interpretation of the venation. For example, Rs may be only 2-branched in the fore wing of *Hadentomum* with a double row of cellules between Rs and M, as in *Hadentomoides.*



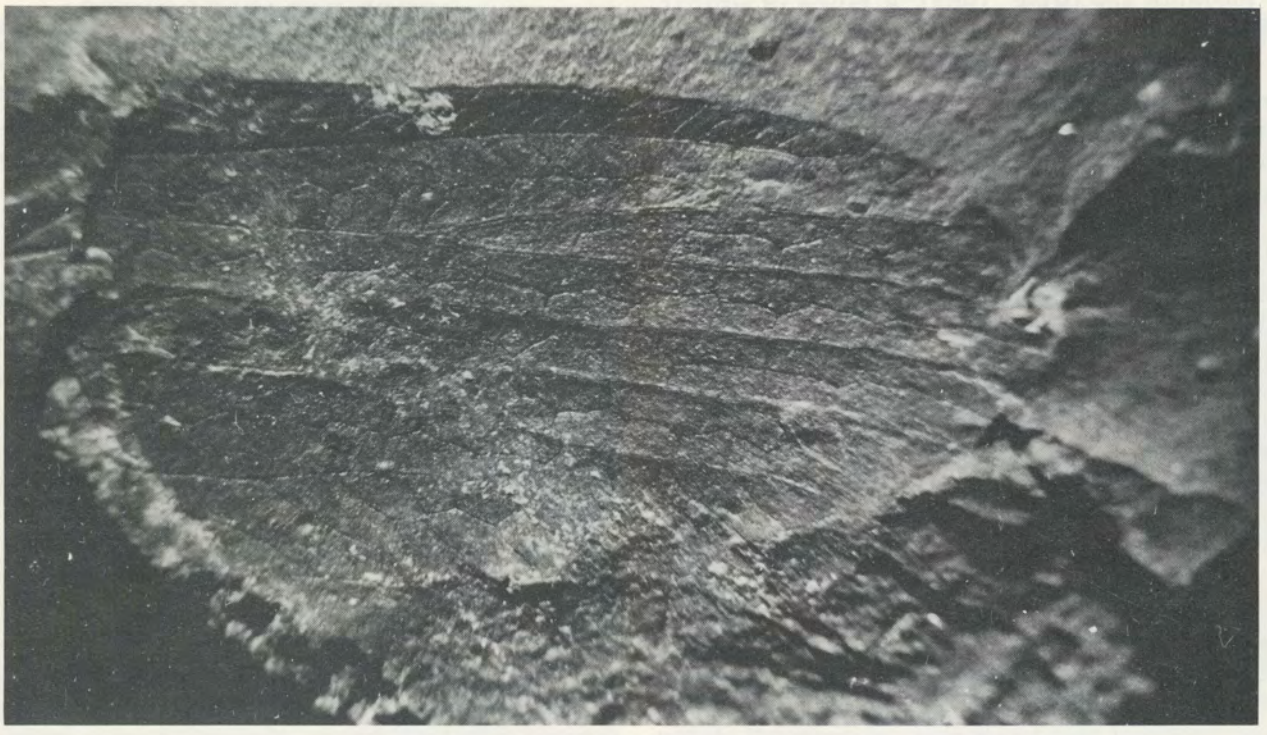


Fig. 1 *Hadentomoides dwykensis* sp. nov. Holotype X10 approximately.

Hadentomoides dwykensis sp. nov.
(Figure 1)

Derivation: dwykensis = from the Dwyka Series.

Type: Holotype in the Bernard Price Institute for Palaeontological Research, University of Witwatersrand, Johannesburg, South Africa. Counterpart, U.R. 10900, in the Geology Department, University of Rhodesia, Salisbury, Rhodesia.

Type Locality and Horizon. Matabola Flats, Rhodesia, Lat. 18° 07' S, Long. 27° 48' E. Depth in core approximately 880 feet (see Bond and Stocklmayer, 1967). Cycle 3, right at the top of the Dwyka succession in Rhodesia.

Description: Length of wing apex, as preserved, 12 mm ca.; width 7 mm. Sc extending well towards apex, but weak. R with numerous terminal twiggings to the costal margin. Rs 2-branched. MA simple. MP with two major branches, posterior branch with pectinate end-twigging. CuA with several terminal pectinate branches to the posterior margin, the stem of the vein subparallel to the margin, more as in *Protembia* than in *Hadentomum.*

Note: The species differs from *Hadentomum americanum* mainly in the terminal branching of M and more regular development of cellules in the wing.

ACKNOWLEDGEMENTS

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