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ON SOME FOSSIL CRYPTOCERATA (HETEROPTERA : INSECTA) WITH DESCRIPTION OF A NEW GENUS ET SPECIES

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ABSTRACT

In this paper some of the fossil species of Nepidae & Belostomatidae examined by the author in different museums in Europe, are outlined and a new genus *et* species of a belestomatid is described.

During a short visit to the Geological Laboratory, Polish Academy of Sciences, Krakow, Mrs Ewa Kwietkowska, Scientist, Dr S. Gasiorowski, the Paleontologist, and Dr S. Kwietkowski, the Director of the Institute, placed before the author some interesting insect fossils from Solenhofen Limestones, or the so-called Bavarian fossils which included some odonates, and two belostomatid bugs. Since one of the belostomatids appeared new, material available in the Museum fuer Naturkunde an der Humboldt Universität, Berlin (G. D. R.), and the Department of Entomology, British Museum (Natural History), London, from the same limestone deposits as well as the extant species available at Berlin Museum were examined for comparison.

Handlirsch (1906) dealt in detail the insect fossils from Solenhofen limestones and reviewed the earlier records in his famous treatise. Carpenter (1932) discussed on the fossils from the same region available in the museums of Carnegie and Comparative Zoology in the United States. Becker-Migdisova (1962) reviewed the fossil Heteroptera including those from the Bavarian limestones. Our knowledge on the fossil belostomatids remained the same from Handlirsch's times, save the one described from the Tertiaries (Oligocene-Miocene) viz. *Lethocerus sulcifemoralis* Riha & Kukalowa (1967).

The following account deals with not only the belostomatids examined, but also the Nepidae present in the Berlin Museum. The measurements are given in cms.

Superorder : HEMIPTEROIDEA
Order : HETEROPTERA Latreille
Series : CRYPTOCERATA Fieber
(= HYDROCORISAE Latreille)
Family : NEPIDAE Latreille

Mesonepa primordialis (Germar)

Nepa primordialis Germar, 1839. *Nova Acta Akad. Leop. Carol.*, XIX : 206, pl. 22, fig. 7.

Mesonepa primordialis : Handlirsch, 1906. *Foss. Ins.*, : 637, pl. LI, fig. 20.

Handlirsch (1906) transferred Germar's *Nepa primordialis* to a new genus *Mesonepa*. Carpenter (1932) stated that this is an obscure insect, and that he studied two specimens in Carnegie museum, and three in the Museum of Comparative Zoology.

Material examined : 1 ex., 1880, Haeberlein (with a remark "figured by Handlirsch" ; 1 ex., Ober-Juras., Eichstaedt, coll. *Ruhle v. Lilienstern.*

Measurements : Length, 2.3-2.5 ; Width of Prothorax 0.9 ; Width of abdomen 1.2-1.3.

Remarks : Since there is a note that it was "figured in Handlirsch (1906)" it is possible that Prof. Handlirsch examined both the specimens. Handlirsch (*op. cit.*) also described another species *M. minor* which could not be traced during my short stay and possibly it might have been located there. Carpenter (1932) examined eight examples of the latter species : three in Carnegie and five in Comparative Zoology Museums respectively.

Family : BELOSTOMATIDAE Leach

Mesobelostomum deperditum (Germar)

(Figs. 1-3)

Scarabaeides deperditum Germar, 1839. *Nova Acta Akad. Leop. Carol.*, XIX : 218, pl. 23, fig. 17.

Mesobelostomum deperditum Haase, 1890. *N. J. Miner.*, II : 88 ; Handlirsch, 1906. *Foss. Ins.*, : LI figs. 22-25. ; Carpenter, 1932. *Ann. Carneg. Mus.*, 21 : 119 ; Bekker-Migdisova, 1962. *Osnovy Palaeonotologea* : 214, fig. 636.

This is by far the most common aquatic bug among the Solenhofen deposits. The extant forms are all fresh-water inhabitants, but it may be interesting to recapitulate the observations of Carpenter (1932) that

Fig. 1

it was likely that these insects actually lived as adults in the waters that deposited the limestones though they were saline, but might have bred in the nearby freshwater lakes, and flew to these waters as adults. To this, we may add that it is perhaps more possible that bodies of the bugs were washed into these waters through streams. Carpenter (1932) also stated that most of these specimens were poorly preserved, but some, however, show the details of the wings and body structure. This observation

strongly supports the possibility of their transport from a distance and in course of which suffered damage, before deposition.

Fig. 2

Handlirsch (1906) figured the specimens well. Carpenter (1932) examined 11 examples

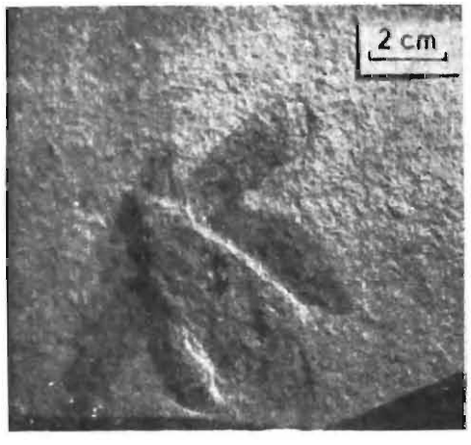

Fig. 3

in the Carnegie Museum, 19 in Museum of Comparative Zoology, obtained one from the Palaeontological Museum of Bavaria, Munich, and another bought from Ward's establishment.

Material : 2 exs. labelled SOK (possibly Solenhefen Oberkreide), 1854 (one of which posteriorly incomplete) ; 3 exs, Haberlein, 1880 (in Museum fuer Naturkunde an der Humboldt Universität, Berlin) (figs. 1 & 2) ; 1 ex. In. No. 44297 labelled as *M. deperditum* from Lithographic stones, Solenhofen, Bavaria, colls. 1862 with a remark "figured by Popov, Y A. 1971. *Trud. Pal. Inst.*, 129., pl. 2, fig. 3) (in Department of Entomology, British Museum (Nat. History), London) , 1 ex., in Geological Laboratory, PAN. Krakow (fig. 3).

Measurements : Length 4.7-4.95 or 5.0 ; Width of Pronotum 1.2-1.4 ; Width of abdomen 1.4-1.9.

Remarks : The Berlin Museum specimens were also preserved incompletely as stated by Carpenter (*op. cit.*). This species comes very close to the modern *Belostoma* or *Lethocerus*. The specimens from Berlin Museum and Krakow Geological Laboratory are given in figs 1-3.

Stanislawia n. gen.
(Figs. 4-6)

Type species : *Stanislawia ewaae* n. sp.

In all the extant and the fossil belostomatid species known, the prothorax is more or less trapezoidal, with rounded anterolateral angles. In the second belostomatid example from the Geological Laboratory, PAN, Krakow, the prothorax is not distinctly trapezoidal, the anterior margin finely sinuate, and the anterolateral angles are drawn into spinous protruberances (figs. 4-6), which makes it distinct from all the hitherto known genera *et* species (both extinct & extant) and hence accommodated in a new genus *Stanislawia*.

Stanislawia ewaae n. sp.
(Figs. 4-6)

Description : Body very large as in

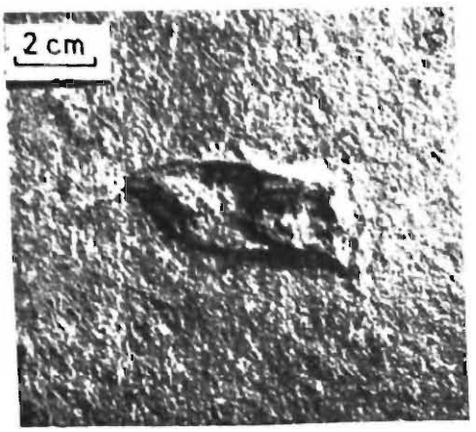

Fig. 4

Belostoma, or *Lethocerus*, and *Mesobelostoma*, nearly elliptical ; head not visible in the specimen ; prothorax with anterior margin finely sinuate and provided with spinous protruberances to the anterolateral angles ; scutellum nearly as broad as its length ; hemelytra or wings not clear ; no trace of legs except parts of the third femora.

Measurements

Length of the prothorax upto the anterior margin of the scutellum	0.8
Width of the prothorax to the tips of the spinous processes	3.5
Length of the scutellum	1.9
Width of the scutellum	2.0
Length of the abdomen	5.3
Width of the abdomen	2.4

Material : 1 ex. (*Holotype*) Solenhofen limestones, coll. xxxxx, In Geological Laboratory, PAN, Krakow.

Fig. 5

Etymology : The new genus is named after the first names of Drs S. Gasiorowski, the well known paleontologist, and Dr S. Kwietkowski, the Director of Geological Laboratory, Krakow, while the specific appellation is after Mrs Dr Ewa Kwietkowska, Scientist in the same laboratory, who remembered about the purchase of these fossil specimens years back and traced them from the unidentified deposits in the laboratory.

Remarks : The new genus *et* species can be easily distinguished from extinct *Mesobelostomum* Hasse of the Jurassic, the extinct species of *Lethocerus* of the Tertiaries, and

Fig. 6

the extant genera of *Belostoma* Latreille, or *Lethocerus* Mayr, *Diplonychus* Laporte (= *Sphaerodema*), *Benacus* Stal, *Abedus* Sta., at the first sight by the sinuate anterior margin and spinously tuberculated antero-lateral angles.

Diplonychus sp.

Material : 1 ex., labelled as "*M. belostomum* gen. Fischersche Sammulung, Dorsal and Ventral hlb.," in the Museum fuer Naturkunde an der Humboldt Universität, Berlin.

Remarks : From the general facies, it appears to be a *Diplonychus* rather than a *Mesobelostomum*, or may be a juvenile of the latter. Oppenheim (1888) however reported *Sphaerodema jurassicum* in the fossil state.

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