VARIABILITY AND TAXONOMY OF *MAENECERAS* (GONIATITIDA, SPORADOCERATIDAE) FROM THE EARLY FAMENNIAN OF SOUTHERN MOROCCO

Bockwinkel, Jürgen[1], **Becker**, Ralph Thomas[2], **Ebbighausen**, Volker[3]

([1]Dechant-Fein-Str. 22, D-51375 Leverkusen, [2]Museum für Naturkunde, Invalidenstr. 43, D-10115 Berlin, thomas.becker@rz.hu-berlin.de, [3]Engstenberger Höhe 12, D-51519 Odenthal; all Germany)

The Sporadoceratidae are one of the most succesful and longest-ranging Famennian ammonoid family with global distribution in (sub-)tropical areas. At the base of the classical Upper Nehden-Stufe (do IIß = Upper Devonian II-G), the oldest genus of the family, *Maeneceras*, descended from *Cheiloceras (Puncticeras) lagowiense* by the insertation of shallow lobes in the ventral (A_2-lobe) and dorsal (U-lobe) saddles. More than a dozen early Famennian (Nehden-Stufe) species have been named which are said to be distinguished by shell parameters, constrictions (internal shell thickenings), and by the shape and depths of sutural elements. Similar species (*Maeneceras ungeri* Group) occur higher in the Famennian (UD III-V) but are all characterized by spiral ornament as in many Carboniferous goniatites and they will be placed in a new genus.

In order to clarify the taxonomic status and variability of early maeneceratids, a large population (nearly 300 specimens) from a single bed low in UD II-G at Hassi Nebech (southern Tafilalt, Anti-Atlas) has been used for morphometric investigation. Apart from usual shell parameters (whorl height and width, apertural height), the number and extent of mould constrictions per whorl and the relative proportions between the two adventitious lobes have been measured. There is moderate variation in whorl expansion rates but larger variation can be seen in whorl width. A number of specimens reach values as in the lectotype of *M. rotundum* (Wedekind) but there is only a slight separation of thicker and more compressed specimens.
The analyses of mould constrictions confirms the former idea that these follow growth stages with distinctive patterns. From 10 to 50 mm diameter, the number of constrictions increases constantly from between 2 and 3 to between 5 and 8 per whorl. In early stages, constrictions are complete but they gradually terminate on the lower or outer flanks in subsequent whorls. From ca. 60 mm diameter, constrictions are reduced drastically which suggests that protection against shell-breaking predators became irrelevant at late maturity. Clearly, taxa based on the number and course of constriction only, cannot be regarded as valid.

Previous studies showed that the second A-lobe became deeper during phylogeny, culminating in species such as *M. milleri* and *M. acutolaterale* where the rounded A_2 is as deep or deeper than A_1. The investigated assemblage shows no relationship between size and depth of A_2 which suggests that forms with various degrees of septal folding were present contemporaneously. A histogram displays a small group with extremely shallow A_2 sensu *M. nuntio*, a majority group with A_2/A_1 ratio between 16 and 28 % as in *M. subvaricatum*, and a slightly separated second peak between 32 and 40 % (trend towards *M. latilobatum*). The population studied gives no clear distinction of biological species; continuing morphological separation in succesive faunas yet has to be shown. However, the subsequent introduction of additional morphological features such as spiral ornament only in the main group with $A_1 < 30\ \%\ A_2$ leaves the possibility that the single bed studied documents an episode of maeneceratid speciation in progress.