International Union of Geological Sciences
Commission on Stratigraphy

Subcommission on Carboniferous Stratigraphy (SCCS)

BEDS NEAR THE DEVONIAN-CARBONIFEROUS BOUNDARY IN THE RHENISH MASSIF, GERMANY

GUIDEBOOK

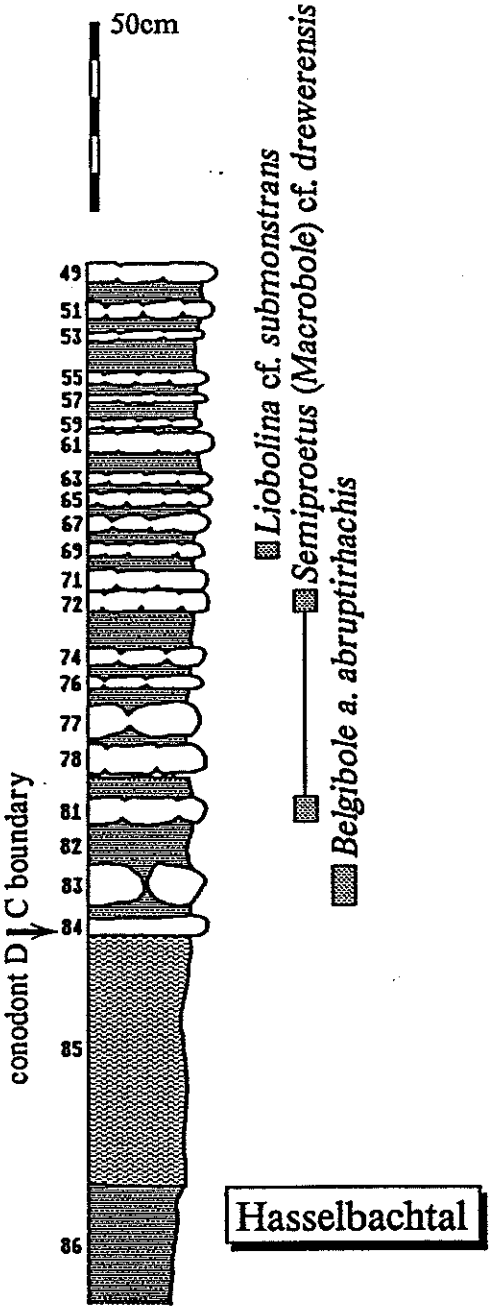


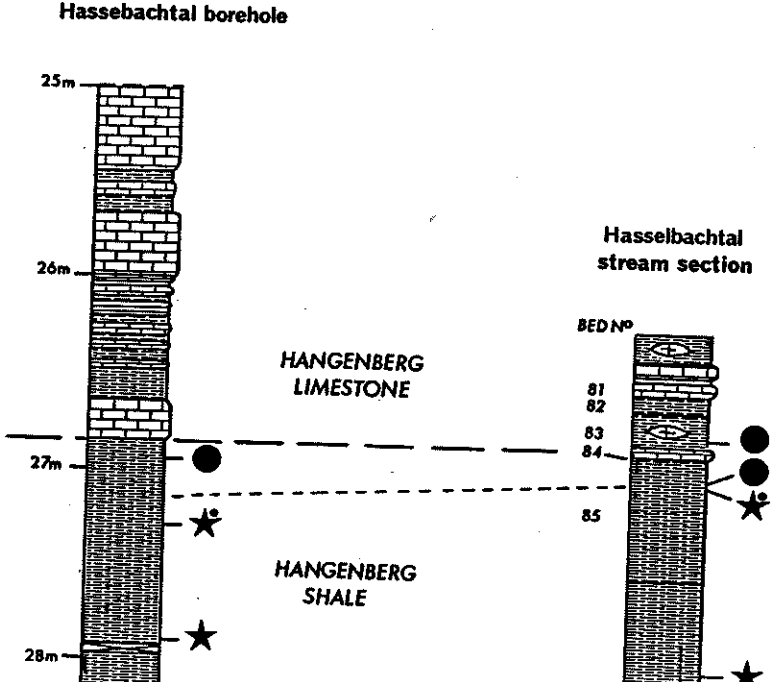
Fig. 20.- Trilobites (after Brauckmann *et al.*, 1993)

THE HASSELBACHTAL BOREHOLE 1

(after HIGGS *et al.*, 1993)

The Hasselbachtal Borehole drilled in 1987 was sited about 70 m from the Hasselbachtal stream section (see Becker *et al.*, 1984, for location). The borehole cored a section through the Hangenberg Limestone and the Hangenberg Shale and eight productive samples for miospores have been obtained from the Devonian-Carboniferous Boundary beds. Figure 21 shows the stratigraphy of the interval studied and the positions of the productive samples. The miospore assemblages obtained are well preserved and allow fine resolution of the LN/VI Miospore Biozonal boundary.

Species \ Samples	Hasselbachtal Bh1					
	26.95	27.30	27.90	28.80	29.50	30.40	31.05
Apiculiretusispora verrucosa		•				•	•
Auroraspora corporiga	•					•	
Auroraspora evanida		•				•	
Auroraspora macra		•		•	•	•	
Bascaudaspora mishkinensis		•	•		•	•	
Camptotriletes paprothii	•	•	•	•	•	•	
Convolutispora caliginosa	•	•				•	
Convolutispora vermiformis		•					
Corbulispora cancellata		•				•	
Corystisporites costatus		•					
Crassispora catenata		•	•	•	•		•
Cymbosporites minutus		•				•	
Dictyotriletes trivialis		•	•				
Diducites plicabilis			•	•			
Diducites versabilis		•	•	•	•	•	
Emphanisporites rotatus		•					
Grandispora cornuta						•	
Grandispora echinata		•	•	•	•	•	
Hymenozonotriletes explanatus	•		•	•	•	•	•
Knoxisporites literatus						•	•



LN Biozone

Seven LN Biozone assemblages have been obtained from the 31.05 m-27.30 m interval in the upper part of the Hangenberg Shales. The majority of the assemblages are diverse in composition with the zonal species *Retispora lepidophyta* comprising 10-20 % of the spore content. However the presence of this species is noticeably diminished in the highest sample (27.30 m) where it is less than 2 % of the overall assemblage. This highest LN assemblage which occurs 45 cm below the basal bed of the Hangenberg Limestone (about bed 84 of the stream section) is characteristically dominated by specimens of *Retusotriletes* (>50 %), and can therefore be regarded as a transitional LN assemblage.

VI Biozone

A single VI Biozone assemblage was obtained from level 26.95 m which is 10 cm below the base of the Hangenberg Limestone. The assemblage is relatively sparse in composition (12 species). *Retispora lepidophyta* and *Vallatisporites hystricosus* are absent and the assemblage is dominated by simple acamerate taxa belonging to the genera *Retusotriletes, Puntatisporites, Plicatispora* and *Convolutispora.*

The LN/VI Biozone boundary can be confidently recognized in the Hasselbachtal Borehole, it can be placed in the interval between 27.30 m and 26.95 m. Stratigraphically this miospore boundary falls in the 10-45 cm interval below the base of the Hangenberg Limestone. The positioning of this boundary correlates closely with that found in the nearby stream section (fig. 21) where the LN/VI occurs 14 cm below the base of the limestone (Bed 84).

BIOSTRATIGRAPHICAL PROGRESS AND DISCUSSION OF THE HASSELBACHTAL SECTION

(after R.Thomas BECKER, 1993)

The biostratigraphical subdivision, dating and correlation of the two sections in the Hasselbachtal brook cut have recently been altered and refined by new findings, taxonomic revisions and by the temporary extension of the southern slope section by D. Korn. Details are presented in Kürschner *et al.* (1993) and Becker (1993 in prep.) but can be summarized as follows (see figs. 6-9).

Southern slope section

The giant new *Kalloclymenia* of Becker (1988) from Bed 0 belongs to a group with asymmetrically pointed rather than lanceolate lateral lobe as in all true *Kalloclymenia.* This *Kallo. pachydisca* group is preliminary assigned to *Finiclymenia* (s.l.) but may better be placed in a new genus of the Dasbergian/Wocklumian transitional interval. Therefore, Bed 0 may be close to the base of the Wocklum Stufe. Price & Korn (1989) revised *Finiclymenia wocklumensis* and showed that it is restricted to the *sphaeroides* (upper *paradoxa*) Zone. The cf. *wocklumensis* specimen from Bed 18 and other early records of *wocklumensis* probably belong to *Sphenoclymenia* with somewhat homoeomorphic cross-section and ribbing (especially in *Sphenoclymenia erinacea* Price & Korn, 1989 of the lower Wocklum Stufe). Consequently, Bed 18 is still assigned to the *subarmata/brevispina* Zone. The same