presence of clay/organic rich interlayers towards younger strata is present. The top (1256,65 m) is characterised by an erosive contact.
These strata reflect deposition in an open marine subtidal environment.

The upper megasequence starts with bioturbated bioclastic packstones/grainstones. Several porous and karstified horizons occur. Subsequently homogeneous, bioclastic grainstones are present, typically composed by a hash of open marine bioclasts and reworked crustose coralline algae fragments. At the top of the sequence algal bindstones occur; they are intercalated within pseudonodular crystalline chalk with bituminous interlayers and pore fillings. This succession reflects deposition in an open marine subtidal setting with a shallowing upward trend.
The two megasequences yield different cementation histories. These are much more complex than the diagenetic evolution affecting the paleocene-cretaceous sequence on the Brabant platform and Campine basin. Early cementation occurred in a marine setting, while late dissolution and cementation relates to a meteoric realm. An early dissolution stage affected most of the aragonitic components and created a network of small dissolution channels. However, these pores are occluded in a later stage by blocky calcite. According to the stable isotope data cementation by the blocky calcite occurred at shallow depth. The present porosity distribution relates mainly to a late dissolution stage and the creation of secondary porosity. Dissolution agents were meteoric water and carbocylic acids liberated near organic rich interlayers.
These results confirm the depositional basin model and the inversion tectonics structure developed by Martin Bless and his school (Bless, Felder & Meessen, 1987).

Wervik

The Upper Devonian traversed in the Wervik K12 borehole is mainly composed of Frasnian dolostones (interval 207-228m) and Famennian fine grained sandstones to siltstones (interval 178-207 m). The cementation and mineralisation history of these units is very complex but the most peculiar feature is the presence of exotic allochems and oolithes in the basal Famennian beds.

These isotropic pale brown spherical or irregularly corroded allochems with microlithic textures and similarly isotropic spastolithic or crushed «oolithes» are probably derived from a vesicular basic volcanic glass affected by submarine alteration (halmyrolysis).
Some vesicles are empty («spherical bubble shards»). They were compressed after transport and burial. Other vesicles are filled to form amygdales. These «oolithes» underwent a devitrification and chloritisation after transport. This discovery could shed a new light on the origin of the oolithic ironstones of the Famennian in Belgium. Indeed conodonts recovered from the 206,97 m level can be assigned to the Middle-Upper *Palmatolepis triangularis* Zone. This can be correlated to the first horizon of oolithic ironstones of Lower Famennian age in the Synclinoria of Namur, Verviers and Dinant (Dreesen, 1982). A transformation from volcanic «oolithes» into chloritic oolithes present in these ironstones seems plausible.

Petrographic analysis indicates a palagonitisation of strongly vesicular volcanic glass («gel-palagonite»), which implies a synsedimentary submarine volcanic activity with high gas pressure. This should have occurred on the Brabant Massif close to the Ashgill volcanic arch, and confirms the important epeirogenic movement and fracturation affecting the Brabant Massif during Middle and Upper Devonian times.

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SEAM DEVELOPMENT AND VITRINITE REFLECTANCE

Willem J.J. FERMONT[1]

1 Geological Survey of the Netherlands, Geological Bureau, P.O. Box 126, 6400 AC Heerlen, The Netherlands.

The degree of coalification of organic matter has since long been expressed in units of vitrinite reflectance (% Rm). It has been demonstrated that % Rm depends strongly on the thermal history of the organic matter. % Rm data from the Carboniferous in the Netherlands show that the observed coalification trends cannot be explained by geothermal modelling alone. Deviations from the expected downward coalification trends in boreholes have been observed in whole seam samples as well as in subsamples from coal seams.

The deviations can be explained either by postulating differences in the composition of the tanatacoenosis derived from the original peat-swamp environment, or by differences in the degree and process of biochemical degradation following the deposition of organic matter.

There is evidence that especially the postdepositional degradation - being responsible for the selective elimination of organic matter and the constitution of vitrinite precursors - may influence the ultimate vitrinite reflectance values.

It is suggested that the redox-potential of the ambient watermass, which in turn controls the microbiological activity after deposition, may influence the chemical composition of the organic matter and hence the optical properties, i.e. the vitrinite reflectance as well.

ZONED CALCITE CEMENTS : THEIR OCCURRENCE AND INFLUENCE ON THE Mn/Fe RATIO OF VISEAN LIMESTONES OF THE CAMPINE-BRABANT BASIN, BELGIUM

Ph. MUCHEZ[1 2] **& W. VIAENE**[1]

1 Katholieke Universiteit Leuven, Fysico-chemische geologie, Celestijnenlaan 200 C, B-3030 Heverlee, Belgium.

2 Senior research assistant N.F.W.O.

The Visean limestones of the Campine-Brabant Basin, north of the London-Brabant Massif (Belgium) are characterized by zoned calcite cements which formed early in the diagenesis. Primary occlusion of the pores took place in an oxidizing marine environment and later in meteoric and/or marine pore waters under slightly reducing and shallow burial conditions.

Voluminous isopachous and radiaxial fibrous calcites and bladed cements precipitated in a marine oxidizing environment. Further growth of the bladed calcites occurred under more reducing conditions, as demonstrated by the higher