

National Commission for Stratigraphy Belgium

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2.2.1 Mousty Formation - MST

Lower Paleozoic

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Author: Malaise, 1883: "couches noires de Mousty"; formally by Malaise, 1900: "Assise des phyllades et schistes noirs ou graphiteux avec phtanites, de Mousty"; modified by: Verniers et al., 2001; Herbosch, 2009 (herein).

Description: mainly slate (mudstone to siltstone) of grey-blue to grey-black colour, often with graphite and pyrite (black shale facies). Massive bedded or finely laminated with rhythmic variations in clay and organic matter content typical for black shale. Stratification can also be marked by light or greenish coloured, more silty beds or laminae, or by banded, layer-parallel colour variations. Sometimes grey more or less clayey siltstone with pyrite occurs, and occasional centimetric (especially in Tangissart Member) to decimetric fining upward sandstone or siltstone sequences, interpreted as distal high density turbidites (Bouma type) or fine-grained turbidites (Piper - Stow model). Quite frequently a variable enrichment in Mn is observed in outcrops by a black surface coating with an iridescent appearance and in thin sections by the presence of tiny garnet (spessartite) and Mn-ilmenite porphyroblasts.

In the Dyle Basin, the lower boundary of the Mousty Formation with the Tubize Formation is everywhere marked by a fault (Asquemont Detachment System, Debacker et al., 2004), which probably also cuts out the base of the formation (and also the totality of the Jodoigne and Oisquerq formations). This contact is nowhere visible but was locally recognized during a magnetic survey in the Orne valley (de Magnée & Raynaud, 1944). In the lower part of the formation occurs the Franquennes Member (FRQ) characterized by decimetric siliceous beds or lenses of lydite (phtanite of the older literature) embedded in typical black shale. These lydite show numerous transparent objects (150 to 200 microns) formed by microcrystalline quartz having the shape and size of radiolarians, but their identity could not yet be confirmed by specialists (Herbosch et al., 2001 p. 24; Herbosch & Blockmans, Wavre - Chaumont map, in press). The unnamed and probably thick middle part of the formation is poorly known due to the lack of good outcrops (only numerous small and discontinuous pits). Some parts are clearly more silty with grey-black pyritic shale gradually passing downwards into grey pyritic siltstone and sometimes sandstone (Court-St-Etienne borehole and section along the disused railway near Court-St-Etienne). The Tangissart Member (TAN), at the top of the formation, is characterised by an increasingly recurrent black slate with abundant millimetric light-coloured silty laminae (interpreted as fine-grained turbidite). The disappearance of the last black slate interval marks the boundary with the overlying Chevlipont Formation. This is the only visible boundary between formations in the Cambrian of the Brabant Massif.

Stratotype: not yet defined; the type area is in the Dyle basin. The Franquennes Member is defined in the old quarry at Franquennes, Céroux-Mousty (x 164,53 y 149,85). The disused railway Court-St-Etienne - Genappe show a good section from the middle member between Km 31 and 32. The upper Tangissart Member is defined along the railway Ottignies-Charleroi, north of the Laroche railway station, in the section between Km 36.20 and 36.15. See also Delcambre & Pingot (2002, pp. 15-17, fig. 8, 9).

Area: Outcrop area of the Brabant Massif: only in the Dyle basin. Removed by fault (Asquemont Detachment System, Debacker et al., 2003; Herbosch et al., map Ittre-Rebecq, in press) in the Senne basin. Also in boreholes from Eine, Vollezele (Dender area), Cortil-Noirmont and Sauvenière (N of Gembloux, Orneau valley).

Thickness: difficult to estimate, but a minimum of 1000 m is tentatively suggested.

Age: Mid Cambrian to the earliest Tremadocian (Ordovician). Graptolites (*Rhabdinopora* sp.) and acritarchs in the Tangissart Member prove the early Tremadocian age of that member (Lecompte, 1948, 1949; Martin, 1969a, b, 1975; Vanguetaine in André et al., 1991). The older parts of the formation were only dated by acritarchs in boreholes (but never in outcrop samples, Vanguetaine, 1973ms, 1992): lower and middle part of the Upper Cambrian for Eine (84E1372) and Vollezele (100E010) boreholes (Vanguetaine, 1992 p. 8 & fig. 6, 8) and Upper Cambrian for Cortil-Noirmont (130W539) borehole (Vanguetaine in Delcambre & Pingot, 2002 p. 17 and pers. comm.). It is important to mention that the Leuven borehole (89E01), dated with acritarchs to the lower part of the Middle Cambrian (Vanguetaine, 1973ms, 1992 fig. 8), was recently attributed to the Jodoigne Formation based on its facies (Herbosch et al., 2008 p. 143). In the new global Cambrian stratigraphy (Babcock & Peng, 2007 chart of correlation fig. 2; Peng & Babcock in Gradstein et al., 2008) the Upper Cambrian corresponds to the new series 3 called the Furongian (Peng et al., 2004).

Remarks: synonyms: the Tangissart Member is the formal name for the informal "formation X" (Herbosch in André et al., 1991).

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