

Proposal for the Subcommittee on Cretaceous Stratigraphy – National Commission on Stratigraphy

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Context

The revision of the geological maps 45/1-2 Beloeil-Baudour, 45/3-4 Jurbise-Obourg, 45/5-6 Quievrain-St-Ghislain and 45/7-8 Mons-Givry, by Julien Denayer and Bernard Delcambre (SGW) is now finished and the documents are being prepared for their publication in the next years.

The field work and re-interpretation of archives and borehole data led to the reconsideration of several lithostratigraphic units and their use as mapping units. Moreover, it was highlighted that several homonymy issues exist. The present document is a proposition for fixing these issues and refine the local Cretaceous stratigraphic scheme.

1. Obourg- Nouvelles Formation

The geological mapping in the Mons Basin demonstrated that:

- the distinction between Obourg and Nouvelles formations is impossible without continuous section;
- the hard-ground marking the boundary is usually lacking outside the type section;
- the brachiopod *Magas chitiniiformis* (*Magas pumillus* auct.), so-called typical of the Nouvelles Formation occurs sporadically, mostly in the upper part;
- in boreholes (a posteriori from archive descriptions), the boundary between the two units is very variable.

Moreover, on the maps 46/5-6 Binche-Morlanwez (Hennebert & Delaby, 2017) and 46/1-2 Le Roeux-Seneffe (Hennebert & Vanneste, 2016), the two formations were grouped.

In order to satisfy to the definition of a formation as a mapping unit, it is proposed to gather the two units into a single lithostratigraphic unit named Obourg-Nouvelles Formation.

This Obourg-Nouvelles Formation would have as stratotype the Harmignies quarry. The base of the formation and contact with the underlying Trivières Formation is also exposed in the Obourg quarry (historical section for the eponymous formation)

whereas the contact with the overlying Spiennes Formation is also exposed in the *carrière du Haras* at Nouvelles.

The description of the Obourg-Nouvelles Formation combines in stratigraphical order the description of the previous *Craie d'Obourg* (Cornet, Briart, 1870) and *Craie de Nouvelles* (Briart, Cornet, 1870).

References: Robaszynski & Christensen (1989), Christensen (1999), Simon (2000), Robaszynski et al. (2002), Faÿ et al. (2025).

2. Vert Galand Formation

In the northern and western sides of the Mons Basin, the marly facies of Turonien-Cenomanian age, formerly named *Dièves* et *Fortes Toises* (e.g. Cornet & Rutot, 1902, 1903; Cornet, 1927), are not easily distinguished. This is particularly true in outcrop where induration, silicification and decalcification affects variously the marl that remain carbonate in borehole. The strongly diachronic transgressive Turonian *Dièves* are very variable in thickness, development and lithologies making rather difficult their attribution to a lithostratigraphic unit. They are moreover in part or in totality not deposited locally, the *Fortes Toises* resting directly on the *Tourtia* conglomeratic horizon.

On the geological maps 44/3-4 Laplaigne-Peruwez (Hennebert, 1999) and 46/1-2 Le Roeulx-Seneffe (Hennebert & Vanneste, 2016), these units were systematically grouped. For the same reasons, these lithologies were also mapped together on the maps of the Mons Basin.

In order to satisfy to the definition of a formation as a mapping unit, it is proposed to gather these units into a single lithostratigraphic unit named Vert Galand Formation.

The Vert Galand Formation was introduced by Doremus & Hennebert (1995a, b) in the Tournai area, to gather the Bruyelles and Merlin Member.

- The Bruyelles Member is dominated by marly facies, historically designated as the *Dièves inférieures* (or *Dièves multicolores*, or *Assise de Saint-Aybert*, in the French nomenclature, e.g. Gosselet, 1913; Dehée, 1927), overlain with the *Dièves moyennes* (or *Dièves vertes* in the French nomenclature) and then the *Dièves supérieures* (or *Dièves bleues* or simply *Bleus* in France). The three units, despite their name, were mostly separated on a chronostratigraphic level.
- The Merlin Member (= *Fortes Toises auct.*), a marl with siliceous concretions.

Robaszynski et al. (2002), following Marlière & Robaszynski (1975), divided the *Dièves* into two formations, namely the Thivencelles marl Formation (= *Dièves inférieures* + *Dièves moyennes*) and Thulin marl Formation (= *Dièves supérieures*). The *Fortes Toises*

were named Ville-Pommerœul Formation. For Robaszynski et al. (2002), the names Bruyelles and Merlin were synonymous with Thivencelles + Thulin and Ville-Pommerœul and therefore eliminated them.

Due to the abovementioned argument, it is proposed to revive the Vert Galand Formation for the Turonian-Cenomanian marly deposits of the Mons Basin. This Vert Galand Formation contains three members, in ascending order:

- The Thivencelles Member (*Dièves inférieures et moyennes*)
- The Thulin Member (*Dièves supérieures*)
- The Ville-Pommerœul Member (*Fortes Toises*)

These members can be distinguished in continuous sections and borehole but, with very few exceptions, not in the field where they crop out in very poor conditions. This subdivision was used on the new geological maps (45/1-2 Beloeil-Baudour and 45/5-6 Quievrain Saint-Ghislain). In the eastern side of the Mons basin, the Ville-Pommerœul Member is replaced by the Thieu Member (glauconite, *Verts à Têtes de Chats*, auct.) east of the Bois de Baudour (and not in Gottignies as noticed by Marlière, 1964)

The three individual members keep their original definition and type sections (see Marlière & Robaszynski, 1975; Robaszynski et al., 2002). The Thivencelles and Thulin members can be observed in the cover of the Tournai quarries as well as in the Hautrage quarry (base) whereas the Ville-Pommerœul Member and its contact with the overlying Haine-Saint-Paul Formation are exposed in the embankment of the rue du Mont Jacot at Hautrage.

References: Cornet (1908, 1919, 1923), Marlière (1964), Robaszynski (1971), Marlière & Robaszynski (1975), Doremus & Hennebert (1995a, b), Hennebert (1999), Robaszynski et al. (2002).

3. Homonymy: Haine Group

The *Groupe de la Haine* (= *Meules* or *Meules de la Haine* or *Gaize de la Haine* auct.) gathering the Pommerœul, Harchies, Catillon, Bracquegnies and Bernissart formations of Albion to Cenomanian age was introduced by Marlière & Robaszynski (1975). The latter is named Haine Greensand Group by Robaszynski et al. (2002).

The Haine Group introduced by Marechal (1993) gather the Montien auct., i.e. the Ciply Formation, Mons Formation and Hainin Formation of Danian age.

To avoid the homonymy issue, it is proposed to keep the name Haine Group for the Cretaceous unit as it is the priority and to re-name By-Haine Group the Paleogene unit. The new name is a combination of the By River and Haine River, both flowing where the Danian units crop out.

This By-Haine Group is used as such on the geological map 45/5-6 Quievrain-Saint-Ghislain and 45/7-8 Mons-Givry.

This proposal is also transmitted to the Subcommittee on Paleogene-Neogene Stratigraphy of the NCS.

4. Homonymy: Hainaut Group

The *Groupe (continental) du Hainaut* (= *Wealdien* or *Groupe continental infracrétacé* or *faciès wealdiens auct.*) gathering the Hautrage, Baudour, Sainte-Barbe and Saint-Pierre Formation of Barremian-Albian(-Cenomanian) age was introduced by Marlière & Robaszynski (1975). The latter is named *Formation du Hainaut* by Doremus & Hennebert (1995a, b) and Hennebert (1999) then Hainaut Group by Robaszynski et al. (2002).

The Hainaut Formation (Quaternary) was introduced by Paepe & Vanhoorne (1976) as Hainaut Formation after *loess hennuyen* (Gullentops, 1954). Note that in Paepe & Vanhoorne (1976) the term Hainaut Formation appears on p. 27 but in the table, Hennuyen Formation is used. The latter became the Hainaut Member of the Gembloux Formation in Gullentops et al. (2002).

To avoid the confusion between the name (Hainaut) and adjective (*hennuyen* – that, besides, should be *hennuyer* to be correct) but also the authorship (1954 or 1976), it is proposed to modify the loess unit. It could be re-named (Bas-)Plateau hennuyer Member to keep the geographical affinity.

The use of Hainaut for the Cretaceous Group is more frequent in the literature than Hainaut as a Holocene Member. It is used in such way on the geological maps of the Tournai and Mons areas.

This proposal is also transmitted to the Subcommittee on Quaternary Stratigraphy of the NCS.

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