

# FORAMINIFERA FROM THE CRETACEOUS OF SOUTH LIMBURG, NETHERLANDS. LVI.

Foraminifera of the highest "Post-Maestrichtian" outcropping above the Md in South Limburg and the Canal Albert region in North Eastern Belgium.

by J. HOFKER

In the Eastern part of the quarry Curfs, in several drill-holes in the vicinity (Amby, Meerssen) and in the most Northern part of the Tranché du Canal Albert near Vroenhoven, Belgium, above the fine-grained Me and above the fine grained Lowest Paleocene, which two formations are separated from each other by a distinct fossiliferous hard bank, a much coarser grained sediment is found, in which Krutzer and Meyer found their *Crania brattenburgica geulhemensis* nov. subsp. (Natuurhist. Maandblad, 47, Dec. 1958, pp. 135-141). They emphasize that this form is different from that which is found in the highest Danian in Denmark (Herfølge) and in the lowest Paleocene (Lelling); however they believe that this difference is due to different circumstances, that it a geographic subspecies and that consequently these layers in Holland with coarser grains and without glauconite would be of Danian age.

However, the Foraminifera found in these upper layers of the so-called "Post-Maestrichtian" of Holland clearly show that these coarse grained sediments do not belong to the lower "Post-Maestrichtian" but belong to typical Montian, as it has been described by Van Bellen from the famous Bunde drill-holes more to the North (Med. Geol. Stichting, C.V., No. 4, 1946, pp. 1-144). Marking species found in these sediments are:

*Gavelinopsis pseudodiscoidea* (Van Bellen)  
*Rotalia trochidiformis* Lamarck  
*Rotalia saxorum* d'Orbigny  
*Gavelinella danica* (Brotzen)  
*Nonion multisuturatum* Van Bellen  
*Boldia madrugensis* Cushman and Bermudez  
*Thalmannita madrugensis* (Cushman and Bermudez)  
*Pulsiphonina prima* (Plummer)  
*Globigerina daubjergensis* (Catapsydrax stage) Brönnimann.  
*Globorotalia pseudomenardii* Bolli

*Gyroidinoides pontoni* Brotzen  
*Reussella europaea* (Cushman and Edwards)  
*Globigerina pseudobulloides* Plummer (latest stage)  
*Dentalina nasuta* Cushman

This fauna also occurs in the Poudingue de la Malogne in the Basin of Mons, Belgium, just below the typical Tuffeau de Ciply, which is of Montian age. As I have pointed out already, in this basal sediment of the Montian, the latest forms of *Globigerina daubjergensis* and of *Globigerina pseudobulloides* occur for the last time,

## FIGURES.

Fig. 1. *Dentalina nasuta* Cushman; x 75; a, sideview; b, ventral side. This species is known from the Midway Formation, Middle Paleocene; it also occurs in the Eocene.

Fig. 2. *Reussella europaea* (Cushman and Edwards); x 187; a, view on broad side; b, view on angular side; c, apertural side. The species was described for the first time from the Montian of the Paris Basin; it already occurs in the uppermost Danian of Denmark and in the Paleocene; it is a common species in the type-Montian.

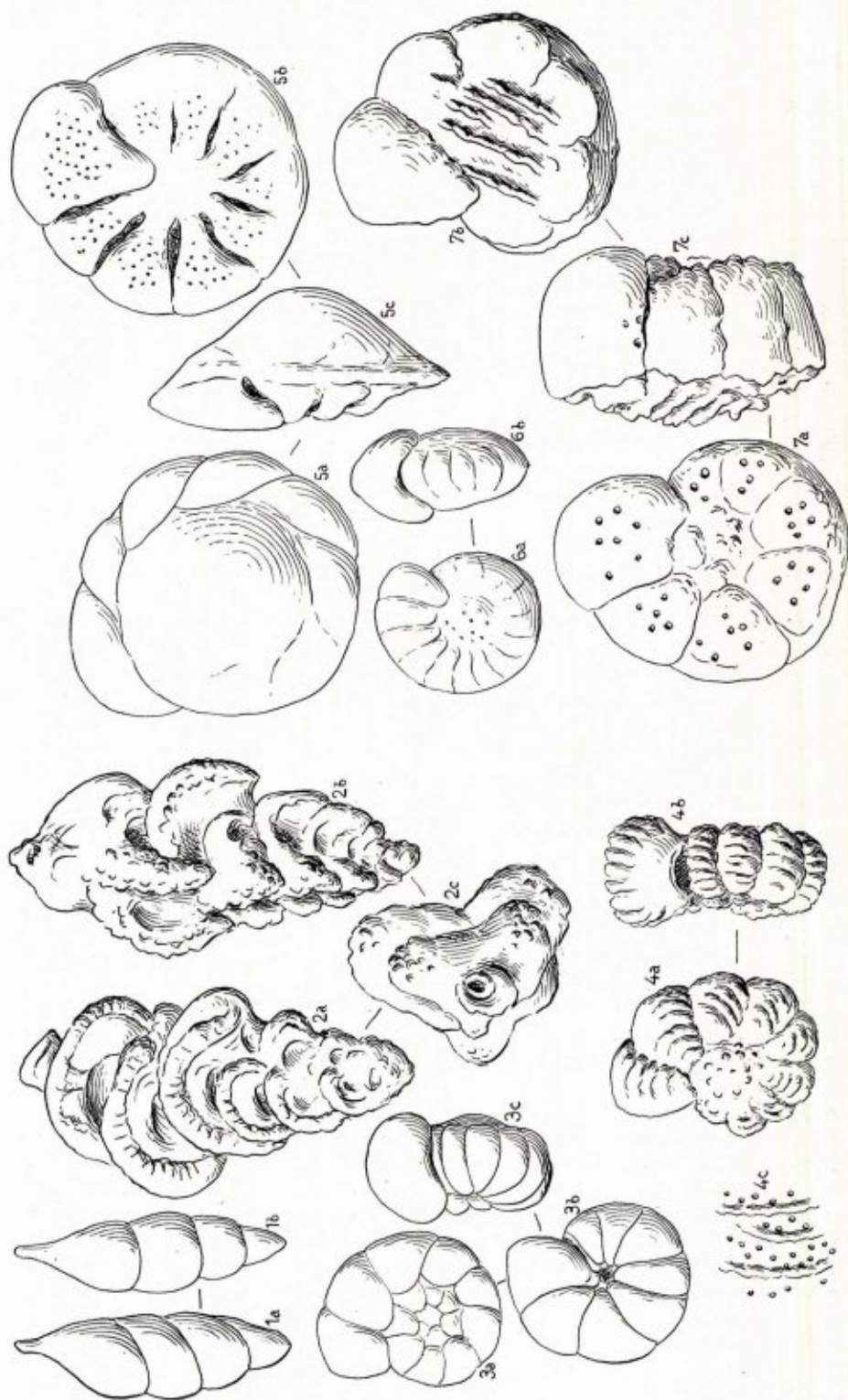
Fig. 3. *Gyroidinoides pontoni* Brotzen; x 75; a, dorsal side; b, ventral side; c, apertural view. Typical specimens already are found in the upper Tuff Chalk; it is common in the Paleocene, also in Denmark.

Fig. 4. *Thalmannita madrugensis* (Cushman and Bermudez); x 75, but Fig. c x 187; a, side view; b, apertural face; c, enlarged surface showing pores and poreless ridges. This species is typical in the type-Montian; it was first described from the Paleocene of Madrug, Cuba; Lys, Int. Congr., 1960, mentions it from Madagascar in the zone with *Globorotalia pseudomenardii* and *G. angulata*, which is in accordance with our find here.

Fig. 5. *Gavelinopsis pseudodiscoideus* (Van Bellen); x 40; a, dorsal side; b, ventral side; c, apertural face. Transverse sections show that this species belongs to *Gavelinopsis*. It is a common form in the Montian.

Fig. 6. *Nonion multisuturata* Van Bellen; x 40; a, side view; b, apertural face. This species is common in the Montian.

Fig. 7. *Boldia madrugensis* Cushman and Bermudez; x 187; a, dorsal side; b, ventral side; c, apertural face. *Boldia madrugensis* was first described from the Paleocene of Madrug, Cuba; it is common in the type-Montian; Lys (l. c., 1960) mentions it from Madagascar in the *Globorotalia velasensis*-zone, middle Paleocene.





there whereas in the Tuffeau itself they have disappeared. The occurrence of *Globorotalia pseudomenardii* in typical form, together with *Boldia* and *Thalmanita* leave no doubt about the age of these layers in which *Crania brattenburgica geulhemensis* Krutzler and Meyer was found: it is the base of the Montian and therefore Paleocene. This statement is confirmed not only by the analysis of the contents of the Poudingue de la Malogne in the Mons Basin, but also in drill-holes and mine-shafts in the vicinity of Geleen in the Northern part of South Limburg, where in the lowest part of typical Tuffeau de Cibly the same fauna is found, now covered by Tuffeau de Cibly and by Calcaire de Mons in the normal sequence. (Hofker, Rev. Micropal. 4, No. 1, 1961, pp. 53-57, fig. 2). Doubtless Loeblich and Tappan had this lowest fauna at hand when they concluded to a Danian age for the Montian (Journ. Pal., 31, 1957, p. 1119-1120); but the author (l.c., 1961, p. 57) concluded from the Foraminifera, that the Montian already is higher lower Paleocene to middle Paleocene; Brotzen, who found this Montian fauna in Poland, also concluded to a middle Paleocene age (this will be published by Brotzen in the Rev. Micropal.).

Since there is no indication of a larger gap of sedimentation between the "Post-Maestrichtian" above the Md and the coarse-grained sediments at the top without glauconite (typical Tuffeau de Cibly always is coarse grained without any trace of glauconite), there is no possibility to suppose that the age of the lower "Post-Maestrichtian" should be Danian; the foraminiferal contents of this glauconitic "Post-Maestrichtian" strongly point to a Lower Paleocene age (Sealandium of Brotzen, 1948) as the author proved already on many occasions (Hofker, Natuurhist. Maandblad, 45, 1956, pp. 51-57; 45, pp. 75-78; 45, 1956, pp. 99-110; 46, 1957, pp. 98-100; 48, 1959, pp. 18-30; 48, 1959, pp. 80-83; 49, 1960, pp. 34-41; 50, 1961, pp. 63-67; 50, 1961, pp. 85-87). The sediments above, with *Crania brattenburgica geulhemensis* are yet younger and thus bear the fauna of the basal Tuffeau de Cibly, Montian, and this subspecies, when it is the only form found, is not contemporaneous with the typical one, but a later form.

The author has already given more detailed descriptions and figures of several of the species mentioned in the short list here:

- Rotalia trochidiformis* Lamarck (84 Congr. Soc. Sav., Dijon, 1959, pp. 287-289, fig. 85-94; Natuurhist. Maandblad, 44, 1955, pp. 119-121).
- Rotalia saxorum* d'Orbigny (84 Congr. Soc. Sav., Dijon, 1959, pp. 286-287, fig. 97-84).
- Gavelinella danica* (Brotzen) (Natuurhistorisch Maandblad, 44, 1955, pp. 49-52, fig. 1-3).
- Boldia magrugaenesis* Cushman and Bermudez (Contr. Cushman Found., 11, 1960, pp. 47-49).
- Pulsiphonina prima* (Plummer) (Natuurhistor. Maandblad, 47, 1958, pp. 82-83, fig. 3,4; Ibid., 50, 1961, p. 67, fig. 11).
- Globigerina daubjergensis*, *Catapsydrax* stage, Brönnimann (Natuurhist. Maandblad, 49, 1960, p. 40, fig. 3; Contr. Cushman Found., 11, 1960, pp. 73-86, fig. 34, tabl. 4); Rev. Micropal., 3, No. 2, 1960, pp. 119-130, pl. 1).
- Globigerina pseudobulloides* Plummer (Natuurhist. Maandblad, 48, 1959, pp. 80-83, fig. 1-5; Rev. Micropal., 3, No. 2, pp. 120-121, pl. 2).
- Globorotalia pseudomenardii* Bolli (Natuurhist. Maandblad, 48, 1959, p. 20, fig. 3).

Some of the species found in these upper sediments of the "Post-Maestrichtian" are figured here, all deriving from Canal Albert, most Northern section near Vroenhoven.

## DE GESCHIEDENIS VAN EEN RINGBLADIGE WILG, *SALIX BABYLONICA* var. *ANNULARIS* FORB.

door E. M. KRUYTZER

In februari van dit jaar werd in de museum-tuin geplant een jong boompje van de Ringbladige wilg, *Salix babylonica* var. *annularis* Forb. (= var. *crispa* Loud.). Door bemiddeling van Dr. J. W. A. van de Graaff hadden wij dat boompje gekregen van de heer J. H. A. N. S. S. uit Geval (B.), die het zelf kwam brengen. De levensgeschiedenis van deze wilg is wel zo ingewikkeld en tragisch, dat het de moeite waard is ze hier te vertellen, vooral ook omdat wijlen Dr. A. de Wever een rol gespeeld heeft in deze geschiedenis. Het eigenlijke verhaal heb ik ontleend aan het artikel van Dr. Van de Graaff, „Enige zeer bijzondere wilgen”, verschenen in *Floralia Huis en Hof*,